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November 24, 1998

Box Patent Application

Assistant Commissioner for Patents
Washington, D.C. 20231

Re: U.S. Non-Provisional Patent Application
Appl. No.: To Be Assigned
Filed: November 24, 1998
For: **NUCLEIC ACID MOLECULES AND OTHER MOLECULES ASSOCIATED WITH THE METHIONINE SYNTHESIS AND DEGRADATION PATHWAYS**
Inventor(s): Stefan A. Bledig *et al.*
Our Ref: 04983.0002US01/38-21 (15077)B

Sir:

The following documents are being submitted under 37 C.F.R. § 1.53(b)(2) herewith for appropriate action by the U.S. Patent and Trademark Office:

1. Patent Application Utility Application;

2. Utility Patent Application Transmittal (PTO/SB/05);

3. Form PTO-1082 (in duplicate);

4. U.S. Utility Patent Application entitled

Nucleic Acid Molecules And Other Molecules Associated With The Methionine Synthesis And Degradation Pathways

and naming as inventor(s):

Stefan A. Bledig, Joseph R. Byrum, Gregory J. Hinkle and JingDong Liu

the application consisting of:

(i) 288 pages of description prior to the claims;

(ii) 5 pages of claims (11 claims);

(iii) a one (1) page abstract;

(iv) sequence listing of 1127 pages;

5. Sequence Listing Disk;

6. Statement Regarding Sequence Submissions;

7. Information Disclosure Statement;

8. Form PTO-1449 (9 pages) with 30 accompanying documents; and

9. Two (2) return postcards.

It is respectfully requested that, of the two attached postcards, one be stamped with the filing date of these documents and returned to our courier, and the other, prepaid postcard, be stamped with the filing date and returned as soon as possible.

The present application claims priority under 35 U.S.C § 119(e) to provisional applications No. 60/067000 filed November 24, 1997, No. 60/066,873 filed November 25, 1997, No. 60/069472 filed December 09, 1997, No. 60/074,201 filed February 10, 1998, No. 60/074282 filed February 10, 1998, No. 60/074280 filed February 10, 1998, No. 60/074281 filed February 10, 1998, No. 60/074566 filed February 12, 1998, No. 60/074567 filed February 12, 1998, No. 60/074565 filed February 12, 1998, No. 60/075462 filed February 19, 1998, No. 60/074789 filed February 19, 1998, No. 60/075459 filed February 19, 1998, No. 60/075461 filed February 19, 1998, No. 60/075464 filed February 19, 1998, No. 60/075460 filed February 19, 1998, No. 60/075463 filed February 19, 1998, No. 60/077231 filed March 09, 1998, No. 60/077229 filed March 09, 1998, No. 60/077230 filed March 09, 1998, No. 60/078031 filed March 16, 1998, No. 60/078368 filed March 18, 1998, No. 60/080844 filed April 07, 1998, No. 60/083067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants" docket No. 38-21(15348)A filed April 29, 1998, No. 60/083387 filed April 29, 1998, No. 60/083388 filed April 29, 1998, No. 60/083389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Ethylene Biosynthetic Pathway" docket No. 04983.0018/38-21(15097)A filed May 08, 1998, No. 60/085,245 filed May 13, 1998, No.

60/085224 filed May 13, 1998, No. 60/085223 filed May 13, 1998, No. 60/085222 filed May 13, 1998, No. 60/086186 filed May 21, 1998, No. 60/086,339 filed May 21, 1998, No. 60/086187 filed May 21, 1998, No. 60/086185 filed May 21, 1998, No. 60/086184 filed May 21, 1998, No. 60/086183 filed May 21, 1998, No. 60/086188 filed May 21, 1998, No. 60/089,524 filed June 16, 1998, No. 60/089,810 filed June 18, 1998, No. 60/089,814 filed June 18, 1998, "Nucleic acid molecules and other molecules associated with the Plant Sugar and Nitrogen Transporters Pathway" docket No. 04983.0043/38-21(15412)A filed June 30, 1998, No. 60/092,036 filed July 08, 1998, No. 60/099667 filed September 09, 1998, No. 60/099668 filed September 09, 1998, No. 60/099670 filed September 09, 1998, No. 60/099697 filed September 09, 1998, No. 60/100674 filed September 16, 1998, No. 60/100673 filed September 16, 1998, No. 60/100672 filed September 16, 1998, No. 60/101132 filed September 21, 1998, No. 60/101130 filed September 21, 1998, "Nucleic acid molecules and other molecules associated with Plants" docket No. 38-21(15459)A filed September 21, 1998, No. 60/101344 filed September 22, 1998, No. 60/101347 filed September 22, 1998, No. 60/101343 filed September 22, 1998, No. 60/104,126 filed October 13, 1998, No. 60/104,128 filed October 13, 1998, No. 60/104,127 filed October 13, 1998, No. 60/104,124 filed October 13, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants" docket No. 38-21(15445)A filed November 18, 1998 and "Nucleic Acid Molecules and other Molecules associated with Plants" docket No. 38-21(15592) filed November 18, 1998 hereby incorporated by reference herein in their entirety.

This application is being filed under 37 C.F.R.§ 1.53(b) without Declaration and without filing fee.

Respectfully submitted,

D R. Marsh

David R. Marsh (Reg. No.41,408)
Kevin W. McCabe (Reg. No.41,182)

Enclosures

Please type a plus sign (+) inside this box → [+]

PTO/SB/05 (2/98)
Approved for use through 09/30/00 OMB 0651-0032
Patent and Trademark Office: U S DEPARTMENT OF COMMERCE

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1 53(b))

Attorney Docket No.	04983.0002US01/38-21(15077)B
First Named Inventor or Application Identifier	Stefan A. Bledig
Title	Nucleic Acid Molecules and Other Molecules Associated with the Methionine Synthesis and Degradation Pathways
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ *Fee Transmittal Form (Form PTO-1082)
   (Submit an original and a duplicate for fee processing)
2. ☒ Specification *[Total Pages* 294 *]*
   (preferred arrangement set forth below)
   - Descriptive title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R&D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings (if filed)
   - Detailed Description
   - Claims
   - Abstract of the Disclosure
3. ☐ Drawing(s) *(35 USC 113)* *[Total Sheets* *]*
4. ☐ Oath or Declaration *[Total Pages* *]*
   a. ☐ Newly executed (original or copy)
   b. ☐ Copy from a prior application (37 CFR 1.63(d))
   (for continuation/divisional with Box 17 completed)
   [Note Box 5 below]
   i. ☐ DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1 63(d)(2) and 1 33(b)
5. ☐ Incorporation By Reference *(useable if Box 4b is checked)*
   The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Microfiche Computer Program *(Appendix)*
7. Nucleotide and/or Amino Acid Sequence Submission
   (if applicable, all necessary)
   a. ☒ Computer Readable Copy
   b. ☒ Paper Copy (identical to computer copy)
   c. ☒ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3 73(b) Statement *(when there is an assignee)* ☐ Power of Attorney
10. ☐ English Translation Document *(if applicable)*
11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503) (Two)
    (should be specifically itemized)
14. ☐ *Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired
15. ☐ Certified Copy of Priority Document(s)
    (if foreign priority is claimed)
16. ☐ Other:

*NOTE FOR ITEMS 1 & 14 IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES. A SMALL ENTITY STATEMENT IS REQUIRED (37 C F R § 1 27). EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C F R § 1 28)

17. **If a CONTINUING APPLICATION**, *check appropriate box and supply the requisite information:*
    ☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: /
    Prior Application Information: Examiner: Group/Art Unit:

18. CORRESPONDENCE ADDRESS

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FORM PTO-1082

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Attorney Docket No.04983.0002US01/38-21 (15077)B

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of
Inventors: Stefan A. Bledig *et al.*
For: **Nucleic Acid Molecules and Other Molecules Associated with the Methionine Synthesis and Degradation Pathways**

The filing fee has been calculated as shown below:

FOR	(Col. 1) NO. FILED	(Col 2) NO EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN A SMALL ENTITY RATE	OTHER THAN A SMALL ENTITY FEE
BASIC FEE				$ 380 00	OR		$ 760.00
TOTAL CLAIMS	-20 =	*	x 9 =		OR	x 18 =	
INDEP. CLAIMS	-3 =	*	x 39 =		OR	x 78=	
MULTIPLE DEPENDENT CLAIM PRESENTED			+ 130 =		OR	+ 260 =	
			TOTAL		OR	TOTAL	

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_ The issue fee set in 37 CFR 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 CFR 1.311(b).
_ Any filing fees under 37 CFR 1.16 for presentation of extra claims.

Date November 24, 1998

David R. Marsh

David R. Marsh (Reg. No. 41,408)
Kevin W. McCabe (Reg. No. 41,182)

NUCLEIC ACID MOLECULES AND OTHER MOLECULES ASSOCIATED WITH THE METHIONINE SYNTHESIS AND DEGRADATION PATHWAYS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of applications No. 60/067000 filed November 24, 1997, No. 60/066,873 filed November 25, 1997, No. 60/069472 filed December 09, 1997, No. 60/074,201 filed February 10, 1998, No. 60/074282 filed February 10, 1998, No. 60/074280 filed February 10, 1998, No. 60/074281 filed February 10, 1998, No. 60/074566 filed February 12, 1998, No. 60/074567 filed February 12, 1998, No. 60/074565 filed February 12, 1998, No. 60/075462 filed February 19, 1998, No. 60/074789 filed February 19, 1998, No. 60/075459 filed February 19, 1998, No. 60/075461 filed February 19, 1998, No. 60/075464 filed February 19, 1998, No. 60/075460 filed February 19, 1998, No. 60/075463 filed February 19, 1998, No. 60/077231 filed March 09, 1998, No. 60/077229 filed March 09, 1998, No. 60/077230 filed March 09, 1998, No. 60/078031 filed March 16, 1998, No. 60/078368 filed March 18, 1998, No. 60/080844 filed April 07, 1998, No. 60/083067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants" docket No. 38-21(15348)A filed April 29, 1998, No. 60/083387 filed April 29, 1998, No. 60/083388 filed April 29, 1998, No. 60/083389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Ethylene Biosynthetic Pathway" docket No. 04983.0018/38-21(15097)A filed May 08, 1998, No. 60/085,245 filed May 13, 1998, No. 60/085224 filed May 13, 1998, No. 60/085223 filed May 13, 1998, No. 60/085222 filed May 13, 1998, No. 60/086186 filed May 21, 1998, No. 60/086,339 filed May 21, 1998, No. 60/086187 filed May 21, 1998, No. 60/086185 filed May 21, 1998, No. 60/086184 filed May 21, 1998, No. 60/086183 filed May 21, 1998, No. 60/086188 filed May 21, 1998, No. 60/089,524 filed June 16, 1998, No. 60/089,810 filed June 18, 1998, No.

60/089,814 filed June 18, 1998, "Nucleic acid molecules and other molecules associated with the Plant Sugar and Nitrogen Transporters Pathway" docket No. 04983.0043/38-21(15412)A filed June 30, 1998, No. 60/092,036 filed July 08, 1998, No. 60/099667 filed September 09, 1998, No. 60/099668 filed September 09, 1998, No. 60/099670 filed September 09, 1998, No. 60/099697 filed September 09, 1998, No. 60/100674 filed September 16, 1998, No. 60/100673 filed September 16, 1998, No. 60/100672 filed September 16, 1998, No. 60/101132 filed September 21, 1998, No. 60/101130 filed September 21, 1998, "Nucleic acid molecules and other molecules associated with Plants" docket No. 38-21(15459)A filed September 21, 1998, No. 60/101344 filed September 22, 1998, No. 60/101347 filed September 22, 1998, No. 60/101343 filed September 22, 1998, No. 60/104,126 filed October 13, 1998, No. 60/104,128 filed October 13, 1998, No. 60/104,127 filed October 13, 1998, No. 60/104,124 filed October 13, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants" docket No. 38-21(15445)A filed November 18, 1998 and "Nucleic Acid Molecules and other Molecules associated with Plants" docket No. 38-21(15592) filed November 18, 1998 hereby incorporated by reference herein in their entirety.

FIELD OF THE INVENTION

The present invention is in the field of plant biochemistry. More specifically the invention relates to nucleic acid sequences from plant cells, in particular, DNA sequences from maize and soybean plants associated with the methionine pathway. The invention encompasses nucleic acid molecules that encode proteins and fragments of proteins. In addition, the invention also encompasses proteins and fragments of proteins so encoded and antibodies capable of binding these proteins or fragments. The invention also relates to methods of using the nucleic acid molecules, proteins and fragments of proteins and antibodies, for example for genome

mapping, gene identification and analysis, plant breeding, preparation of constructs for use in plant gene expression and transgenic plants.

BACKGROUND OF THE INVENTION

I. METHOININE SYNTHESIS PATHWAY

The amino acid, L-methionine, is synthesized in higher plants via a pathway that starts with L-aspartate. This pathway has been studied (Azevedo *et al., Phytochemistry 46*:395-419 (1997), the entirety of which is herein incorporated by reference). L-methionine is one of four so-called aspartate-derived amino acids (along with L-lysine, L-threonine and L-isoleucine)(Miflin *et al.,* In: *Nitrogen Assimilation in Plants,* Hewitt *et al.,*(eds.), Academic Press, New York, 335 (1997); Bryan, In: *The Biochemistry of Plants,* Miflin (ed.), Academic Press, New York, 403 (1980); Lea *et al.,* In: *The Chemistry and Biochemistry of Amino Acids,* Barrett *et al.,* (eds.), London, 5:197 (1985); Bryan, In: *The Biochemistry of Plants,* Miflin *et al.,* (eds.), Academic Press, San Diego, 16:161 (1990), all of which are herein incorporated by reference in their entirety).

The methionine-specific part of the aspartate pathway includes the following enzymes: aspartate kinase (EC 2.7.2.4), aspartate-semialdehyde dehydrogenase (EC 1.2.1.11), homoserine dehydrogenase (EC 1.1.1.3), homoserine kinase (EC 2.7.1.39), cystathionine γ-synthase (EC 4.2.99.9), cystathionine β-lyase (EC 4.4.1.8) and methionine synthase (EC 2.1.1.14).

Aspartate kinase catalyzes the first reaction of the pathway in which aspartate is converted to β-aspartyl phosphate. This enzyme has been isolated and characterized from plant sources including maize, barley, carrot, pea and soybean. These studies have revealed that there are multiple isoenzymes of aspartate kinase and the isoenzymes differ with respect to both

feedback inhibition sensitivity and expression profile (tissue and developmental stage). Feedback inhibition is mediated by lysine and threonine. Transgenic plants which express an unregulated aspartate kinase have demonstrated increased flux through the aspartate pathway. Pathway regulation is reported to be exerted, at least in part, via control of this enzyme's activity.

Aspartate semialdehyde dehydrogenase catalyses the second pathway reaction and converts β-aspartyl phosphate to aspartate semialdehyde via an NADPH-dependent reaction. Gengenbach *et al., Crop Science 18:472-476 (1978),* the entirety of which is herein incorporated by reference, report the isolation of aspartate semialdehyde dehydrogenase from maize suspension culture cells. These suspension cultures did not exhibit feedback inhibition of the enzyme in the presence of aspartate-derived amino acids, with the exception of methionine, for which some feedback sensitivity was observed. Aspartate semialdehyde dehydrogenase enzyme activity has been reported in maize shoot, maize root and maize kernel (Gengenbach *et al., Crop Science 18:472-476 (1978)).*

Homoserine dehydrogenase catalyzes the next step of the pathway in which homoserine is generated from aspartate semialdehyde in a reaction requiring NADH or NADPH. Homoserine dehydrogenase enzyme has been studied in higher plants and multiple isoenzyme forms have been reported (Bryan *et al., Biochemistry and Biophysics Research Communications 41:*1211-1217 (1970); Gengenbach *et al., Crop Science 18*:472-476 (1978); Dotson *et al., Plant Physiology 91*:1602-1608 (1989); Dotson *et al., Plant Physiology 93*:98-104 (1989); Azevedo *et al., Phytochemistry 31*:3725-3730 (1992); Azevedo *et al., Phytochemistry 31*:3731-3734 (1992); Brennecke *et al., Phytochemistry 41*:707 (1996); Aarnes, *Plant Science Letters 9*:137-145 (1977); Bright *et al., Biochemical Genetics 200*:229-243 (1982); Aruda *et al., Plant Physiology*

76:442-446 (1984)*;* Lea *et al.,* In: *Barley: Genetics, Molecular Biology and Biotechnology* Shewrey (ed.), CAB International, Oxford *181* (1992); Davies *et al., Plant Science Letters* 9:323-332 (1977); Davies *et al., Plant Physiology* 62:536-541 (1978); Matthews *et al., Zeitschrift für Naturforschung, Section Bioscience 34*:1177-1185 (1979); Relton *et al., Biochimica et Biophysica Acta* 953:48-60 (1988); Aarnes *et al., Phytochemistry 13*:2717-2724 (1974); Lea *et al., FEBS Letters 98:165*-168 (1979); Matthews *et al., Canadian Journal of Botany 57*:299-304 (1979), all of which references are incorporated herein in their entirety). The isoenzymes have been found to differ with respect to sensitivity to threonine-mediated feedback inhibition, with both sensitive and insensitive forms being isolated from maize suspension cultures and seedlings (Miflin *et al.,* In: *Nitrogen Assimilation of Plants,* Hewitt *et al.,*(eds.), Academic Press, New York, 335 (1997); Bryan, In: *The Biochemistry of Plants,* Miflin (ed.), Academic Press, New York, *5*:403 (1980)).

There is evidence that plants also possess a bifunctional enzyme with both aspartate kinase and homoserine dehydrogenase activities (Lea *et al.,* In: *The Chemistry and Biochemistry of Amino Acids,* Barrett *et al.* (eds), London, *5*:197 (1985), the entirety of which is herein incorporated by reference; Bryan, In: *The Biochemistry of Plants,* Miflin (ed.), Academic Press, New York, *5*:161 (1990), the entirety of which is herein incorporated by reference). Clones of these bifunctional enzymes have been isolated from *Arabidopsis thaliana* (Giovanelli *et al.,* In: *The Biochemistry of Plants,* Miflin (ed.), Academic Press, New York 453 (1990), the entirety of which is herein incorporated by reference) carrot (Giovanelli *et al., Plant Physiology 90:*1584-1599 (1989), the entirety of which is herein incorporated by reference), maize (Singh *et al., Amino Acids 7:165*-168 (1994), the entirety of which is herein incorporated by reference) and soybean (Matthews *et al.,* In: *Biosynthesis and Molecular Regulation of Amino Acids in Plants,* p

294, Singh *et al. (eds.),* American Society of Plant Physiologists, Rockville, MD (1992), the entirety of which is herein incorporated by reference).

The next reported enzymatic step leading to methionine biosynthesis in higher plants is the final common reaction shared by other amino acid end products (threonine and isoleucine). The reaction is catalyzed by homoserine kinase and it generates *O*-phosphohomoserine from homoserine, with ATP serving as the phosphate donor. Exceptions are *Pisum sativum* and *Lathyrus sitivus* which synthesize *O*-acetylhomoserine and *O*-oxalylhomoserine, respectively (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997), the entirety of which is herein incorporated by reference). Enteric bacteria use *O*-succinylhomoserine, while several gram-positive bacteria, yeasts and fungi use *O*-acetylhomoserine (formed using homoserine *O*-acetyltransferase (EC 2.3.1.31) (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)). Homoserine kinase has been reported from multiple higher plant sources (Galili, *The Plant Cell 7*:899-906 (1995), the entirety of which is herein incorporated by reference; Rees *et al., Biochemical Journal 309*:999-1107 (1995), the entirety of which is herein incorporated by reference; Bryan *et al., Biochemistry and Biophysics Research Communications 41*:1211-1217 (1970), the entirety of which is herein incorporated by reference; Gengenbach *et al., Crop Science 18*:472-476 (1978), Dotson *et al., Plant Physiology 91*:1602-1608 (1989), the entirety of which is herein incorporated by reference; Dotson *et al., Plant Physiology 93*:98-104 (1989), the entirety of which is herein incorporated by reference). Homoserine kinase isolated from barley and wheat has not been reported to exhibit aspartate-derived amino acid feedback inhibition (Gengenbach *et al., Crop Science 18*:472-476 (1978); Dotson *et al., Plant Physiology 93*:98-104 (1989)). It has been reported that homoserine kinase exhibits feedback regulation in the dicots, pea (Rees *et al., Biochemical Journal 309*:999-1007 (1995), the entirety of which is herein

incorporated by reference) and radish (Bryan *et al., Biochemistry and Biophysics Research Communications 41*:1211-1217 (1970)). Bacterial and yeast homologues have been reported (Azevedo *et al., Phytochemistry 31*:3725-3730 (1992); Azevedo *et al., Phytochemistry 31*:3731-3734 (1992); Brennecke *et al., Phytochemistry 41*:707 (1996); Aarnes, *Plant Science Letters* 9:137-145 (1977)).

Sulfur, in yeast, is incorporated into *O*-acetylhomoserine resulting in homocysteine. This reaction is catalyzed by the *O*-acetylhomoserine sulfhydrylase (EC 4.2.99.10) (also known as *O*-acethomoserine (thiol)-lyase). *O*-acetylhomoserine sulfhydrylase has been reported to be a homotetramer with a molecular weight of 200,000. *O*-acetylhomoserine sulfhydrylase has also been reported to bind four molecules of pyridoxal phosphate (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)).

In higher plants, the sulfur atom from cysteine and the carbon backbone derived from aspartate used to synthesize methionine are reported to be catalyzed by pyridoxal 5'-phophate (PLP) dependent enzymes (Ravanel *et al., Proc. Natl. Acad. Sci. (U.S.A.) 95*:7805-7812 (1998), the entirety of which is herein incorporated by reference). The amino acid composition of the *O*-acetylhomoserine sulfhydrylase has also been reported to share sequence similarities to the *E. coli* cystathionine γ-synthase and cystathionine β-lyase and cystathionine γ-lyase from *Saccharomyces cervisiae* and rats. All of these enzymes thus appear to belong to one protein family, whose members have evolved from an ancestral pyridoxal phosphate enzyme (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)).

In yeast, the synthesis of cysteine from homcysteine has been reported to require two successive steps, β addition and γ elimination. Cystathionine β-synthase (EC 4.2.1.22) has been reported to catalyze the first reaction where homocysteine and serine yield cystathionine. In *S.*

cervisiae, cystathionine β-synthase is encoded by STR4. STR4 encodes a polypeptide of 506 residues which shows extensive sequence similarity to its functional analog in rats. The rat analog has been reported to contain an additional amino-terminal extension of 60 residues. Moreover, the two enzymes have been reported to be closely related to the cyteine synthase from enteric bacteria and plants (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)).

Cystathionine γ-lyase (EC 4.4.1.1) catalyzes the γ cleavage of cystationine in yeast, the second reported step of the biosynthesis of cysteine from homocysteine. Cystathionine γ-lyase has been reported to have a molecular weight of about 194,000kd. In *S. cerviseae*, cystathionine γ-lyase is encoded by STR1. A mutation in the *S. cerviseae* cystathionine γ-lyase gene leads to a nutritional requirement for cysteine or glutathione. The yeast cystathionine γ-lyase belongs to a protein family which includes a functional analog in rats, a Met25p from yeast and cystathionin β-lyase and cystathionin γ-synthase from *E. coli* (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)).

Cystathionine γ-synthase (also known as *O*-succinylhomoserine (thio)-lyase, E.C. 4.2.99.9) catalyzes the first reported reaction which is unique to methionine biosynthesis, thereby committing aspartate pathway flux toward this amino acid. In this reaction, *0*-phosphohomoserine and cysteine serve as substrates for the production of cystathionine. Cystathionine γ-synthase has not been reported to be regulated by aspartate-derived amino acids feedback inhibition (Bright *et al., Biochemical Genetics 20*:229-243 (1982); Arruda *et al., Plant Physiology 76*:442-446 (1984)). Cystathionine γ-synthase has however, been reported to be sensitive to product inhibition by orthophosphate (Lea *et al., Barley: Genetics, Molecular*

Biology and Biotechnology, Shewrey (ed.), CAB International, Oxford, *181* (1992); Davies *et al., Plant Science Letters 9*:323-332 (1977)). Cloned cystathionine γ-synthase have been reported from *Arabidopsis thaliana* (Davies *et al., Plant Physiology 62*:536-541 (1978)). It has been reported that methionine levels are modulated via regulation of cystathionine-synthase (Matthews *et al., Zeitschrift für Naturforschung, Section Bioscience 34*:1177-1185 (1979-2724 (1974); Lea *et al., FEBS Letters 98:*165 (1979), all of which references are incorporated herein in their entirety).

Cystathionine β-lyase catalyzes the next reaction in the biosynthesis of methionine. This reaction generates homocysteine, pyruvate and ammonia from the enzymatic decomposition of cystathionine. Evidence for isoenzymes which differ with respect to cellular localization have been reported for barley (Matthews *et al., Canadian Journal of Botany 57:*299-304 (1979)) and spinach (Rognes *et al., Nature 287:*357-359 (1980), the entirety of which is herein incorporated by reference).

De novo synthesis of methionine from homocysteine uses a methyl group which originates from single-carbon metabolism. In this metabolism, derivatives of tetrahydrofolate transfer one-carbon groups at the oxidation levels of methanol, fomaldehyde and formate to acceptor meolcules. Single-carbon derivatives of tetrahydrofolate are required for the biosynthesis of methionine, purine nucleotides and thymidylate as well as for the synthesis of N-formylmethionine in the mitochondrion. *S. cerevisiae* possesses two complete sets of folate interconversion enzymes, one located in the cytosol (methionyl-tRNA synthetase, EC 6.1.1.10) and the other located in the mitochondrion (methionyl t-RNA synthetase, EC 6.1.1.10) (Thomas and Surdin-Kerjan, *Microbiol. Mol. Biol. Rev. 61*:503-532 (1997)) and in plants including the

chloroplast (Menand *et al., Proc. Natl. Acad. Sci. (U.S.A.), 95*:11014-11019 (1998), the entirety of which is herein incorporated by reference).

Methionine synthase generates methionine from homocysteine by a methylation reaction and thus represents the final step of the methionine biosynthetic pathway. Methionine synthase is also sometimes referred to as 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase. N-methyltetrahydrofolate serves as the methyl donor in this reaction, which occurs in the absence of cobalamin (Giovanelli *et al., Plant Physiology 90:*1577-1583 (1989), the entirety of which is herein incorporated by reference; Green *et al., Crop Science 14:*827-830 (1974), the entirety of which is herein incorporated by reference).

II. METHOININE DEGRADATION PATHWAY

Plants contain a pathway for the degradation of L-methionine. This degradation pathway includes the following enzymes: methionine adenosyltransferase (EC 2.5.1.6), methionine S-methyltransferase (EC 2.1.1.12), adenosylmethionine hydrolase (EC 3.3.1.2), homocysteine S-methyltransferase (EC 2.1.1.10) and S-adenosyl-methionine decarboxylase (EC 4.1.1.50).

The reported first step in the catabolism of methionine is the ATP-dependent conversion to S-adenosylmethionine (AdoMet), which is catalyzed by the enzyme methionine adenosyltransferase, also known as S-adenosylmethionine synthetase. Methionine adenosyltransferase enzyme has been characterized from several plant sources (Aarnes, *Plant Science Letters 10:*381 (1977), the entirety of which is herein incorporated by reference; Mathur *et al., Biochimia and Biophysica Acta 1078:*161-170 (1991), the entirety of which is herein incorporated by reference; Kim *et al., Journal of Biochemical and Molecular Biology 28:*100 (1995), the entirety of which is herein incorporated by reference) and nucleic acid molecules (genomic and cDNA) have also been obtained from a variety of sources (Izhaki *et al., Plant*

*Physiology 108:*841-842 (1995), the entirety of which is herein incorporated by reference; Espartero *et al., Molecular Biology Plant 25:*217-237 (1994), the entirety of which is herein incorporated by reference). Regulation of methionine adenosyltransferase activity has been observed for the enzyme from *Glycine max* (soybean). In *Glycine max,* methionine adenosyltransferase was reportedly inhibited by S-adenosylmethionine (Kim *et al., Journal of Biochemical and Molecular Biology 28:*100 (1995). Studies have also reported that the levels of methionine adenosyltransferase appear to fluctuate in response to hormonal or environmental conditions such as gibberellic acid (Mathur *et al., Biochimica and Biophysica Acta 1162:*289-29O (1993), the entirety of which is herein incorporated by reference; Mathur *et al., Biochimica and Biophysica Acta 1137:*338-348 (1992), the entirety of which is herein incorporated by reference), salt stress (Espartero *et al., Molecular Biology Plant 25:*217-227 (1994) the entirety of which is herein incorporated by reference) and wounding (Kim *et al., Plant Cell Reports 13:*340 (1994), the entirety of which is herein incorporated by reference). It has also been reported that methionine adenosyltransferase may play a role in the lignification process (Peleman *et al., Plant Cell 1*:81 (1989), the entirety of which is herein incorporated by reference).

AdoMet is further catabolized by several enzymes and has been reported to serve a variety of metabolic functions including that of a methyl donor (Cossins, *The Biochemistry of Plants 11:*317 Devis (ed.), Academic Press, San Diego (1987), the entirety of which is herein incorporated by reference) that of a precursor for polyamine biosynthesis (Tiburico *et al., The Biochemistry of Plants 16:*283 (1990), the entirety of which is herein incorporated by reference) and that of a precursor for ethylene biosynthesis (Kende, *Plant Physiology 91:*1-4 (1989), the entirety of which is herein incorporated by reference; Flurh *et al., Critical Review of Plant*

Science 15:479 (1996), the entirety of which is herein incorporated by reference). In each case, enzymes are present to regenerate methionine from the sulfur-containing backbone resulting in no net loss of methionine.

An enzyme involved in AdoMet catabolism is adenosylmethionine hydrolase (EC 3.3.1.2) which converts AdoMet to methylthioadenosine and L-homoserine. L-homoserine is further metabolized during the biosynthesis of polyamines and ethylene and methylthioadenosine is recycled to methionine. In yeast, a form of adenosylmethionine hydrolase (EC 3.1.1.1) has been reported (http://www.ncbi.nlm.nih.gov/htbin-post/Entrez/query (1998)).

Another enzyme for which AdoMet is a substrate for is homocysteine S-methyltransferase. Homocysteine S-methyltransferase catalyzes the combination of AdoMet, with L-homocysteine to produce both S-adenosyl-L-homocysteine and L-methionine. Another enzyme has been described which generates S-adenosyl-L-homocysteine from AdoMet. This enzyme is called methionine S-methyltransferase and it catalyzes the reaction in which S-adenosyl-L-homocysteine reacts with L-methionine to generate S-adenosyl-L-homocysteine and S-methyl-L-methionine. AdoMet can also be decarboxylated by adenosyl methionine decarboxylase, which generates (5-deoxy-5-adenosyl) (3-aminopropyl) methylsulfonium salt.

III. EXPRESSED SEQUENCE TAG NUCLEIC ACID MOLECULES

Expressed sequence tags, or ESTs are randomly sequenced members of a cDNA library (or complementary DNA)(McCombie *et al., Nature Genetics 1:*124-130 (1992); Kurata *et al., Nature Genetics 8:*365-372 (1994); Okubo *et al., Nature Genetics 2:*173-179 (1992), all of which references are incorporated herein in their entirety). The randomly selected clones comprise insets that can represent a copy of up to the full length of a mRNA transcript.

Using conventional methodologies, cDNA libraries can be constructed from the mRNA (messenger RNA) of a given tissue or organism using poly dT primers and reverse transcriptase (Efstratiadis *et al., Cell 7*:279-3680 (1976), the entirety of which is herein incorporated by reference; Higuchi *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 73*:3146-3150 (1976), the entirety of which is herein incorporated by reference; Maniatis *et al.*, *Cell 8*:163-182 (1976) the entirety of which is herein incorporated by reference; Land *et al.*, *Nucleic Acids Res. 9*:2251-2266 (1981), the entirety of which is herein incorporated by reference; Okayama *et al.*, *Mol. Cell. Biol. 2*:161-170 (1982), the entirety of which is herein incorporated by reference; Gubler *et al.*, *Gene 25*:263-269 (1983), the entirety of which is herein incorporated by reference).

Several methods may be employed to obtain full-length cDNA constructs. For example, terminal transferase can be used to add homopolymeric tails of dC residues to the free 3' hydroxyl groups (Land *et al.*, *Nucleic Acids Res. 9*:2251-2266 (1981), the entirety of which is herein incorporated by reference). This tail can then be hybridized by a poly dG oligo which can act as a primer for the synthesis of full length second strand cDNA. Okayama and Berg, *Mol. Cell. Biol. 2*:161-170 (1982), the entirety of which is herein incorporated by reference, report a method for obtaining full length cDNA constructs. This method has been simplified by using synthetic primer-adapters that have both homopolymeric tails for priming the synthesis of the first and second strands and restriction sites for cloning into plasmids (Coleclough *et al.*, *Gene 34*:305-314 (1985), the entirety of which is herein incorporated by reference) and bacteriophage vectors (Krawinkel *et al.*, *Nucleic Acids Res. 14*:1913 (1986), the entirety of which is herein incorporated by reference; Han *et al.*, *Nucleic Acids Res. 15*:6304 (1987), the entirety of which is herein incorporated by reference).

These strategies have been coupled with additional strategies for isolating rare mRNA populations. For example, a typical mammalian cell contains between 10,000 and 30,000 different mRNA sequences (Davidson, *Gene Activity in Early Development*, 2nd ed., Academic Press, New York (1976), the entirety of which is herein incorporated by reference). The number of clones required to achieve a given probability that a low-abundance mRNA will be present in a cDNA library is $N = (\ln(1-P))/(\ln(1-1/n))$ where N is the number of clones required, P is the probability desired and 1/n is the fractional proportion of the total mRNA that is represented by a single rare mRNA (Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, 2nd ed., Cold Spring Harbor Laboratory Press (1989), the entirety of which is herein incorporated by reference).

A method to enrich preparations of mRNA for sequences of interest is to fractionate by size. One such method is to fractionate by electrophoresis through an agarose gel (Pennica *et al.*, *Nature 301*:214-221 (1983), the entirety of which is herein incorporated by reference). Another such method employs sucrose gradient centrifugation in the presence of an agent, such as methylmercuric hydroxide, that denatures secondary structure in RNA (Schweinfest *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 79*:4997-5000 (1982), the entirety of which is herein incorporated by reference).

A frequently adopted method is to construct equalized or normalized cDNA libraries (Ko, *Nucleic Acids Res. 18*:5705-5711 (1990), the entirety of which is herein incorporated by reference; Patanjali *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:1943-1947 (1991), the entirety of which is herein incorporated by reference). Typically, the cDNA population is normalized by subtractive hybridization (Schmid *et al.*, *J. Neurochem. 48*:307-312 (1987), the entirety of which is herein incorporated by reference; Fargnoli *et al.*, *Anal. Biochem. 187*:364-373 (1990), the

entirety of which is herein incorporated by reference; Travis *et al.*, *Proc. Natl. Acad. Sci (U.S.A.) 85*:1696-1700 (1988), the entirety of which is herein incorporated by reference; Kato, *Eur. J. Neurosci. 2*:704-711 (1990); and Schweinfest *et al.*, *Genet. Anal. Tech. Appl. 7*:64-70 (1990), the entirety of which is herein incorporated by reference). Subtraction represents another method for reducing the population of certain sequences in the cDNA library (Swaroop *et al.*, *Nucleic Acids Res. 19*:1954 (1991), the entirety of which is herein incorporated by reference).

ESTs can be sequenced by a number of methods. Two basic methods may be used for DNA sequencing, the chain termination method of Sanger *et al., Proc. Natl. Acad. Sci. (U.S.A.) 74:*5463-5467 (1977), the entirety of which is herein incorporated by reference and the chemical degradation method of Maxam and Gilbert, *Proc. Nat. Acad. Sci. (U.S.A.) 74:*560-564 (1977), the entirety of which is herein incorporated by reference. Automation and advances in technology such as the replacement of radioisotopes with fluorescence-based sequencing have reduced the effort required to sequence DNA (Craxton, *Methods 2:*20-26 (1991), the entirety of which is herein incorporated by reference; Ju *et al., Proc. Natl. Acad. Sci. (U.S.A.) 92:*4347-4351 (1995), the entirety of which is herein incorporated by reference; Tabor and Richardson, *Proc. Natl. Acad. Sci. (U.S.A.) 92:*6339-6343 (1995), the entirety of which is herein incorporated by reference). Automated sequencers are available from, for example, Pharmacia Biotech, Inc., Piscataway, New Jersey (Pharmacia ALF), LI-COR, Inc., Lincoln, Nebraska (LI-COR 4,000) and Millipore, Bedford, Massachusetts (Millipore BaseStation).

In addition, advances in capillary gel electrophoresis have also reduced the effort required to sequence DNA and such advances provide a rapid high resolution approach for sequencing DNA samples (Swerdlow and Gesteland, *Nucleic Acids Res. 18*:1415-1419 (1990); Smith, *Nature 349*:812-813 (1991); Luckey *et al.*, *Methods Enzymol. 218*:154-172 (1993); Lu *et al.*, *J.*

Chromatog. A. 680:497-501 (1994); Carson *et al.*, *Anal. Chem. 65*:3219-3226 (1993); Huang *et al.*, *Anal. Chem. 64*:2149-2154 (1992); Kheterpal *et al.*, *Electrophoresis 17*:1852-1859 (1996); Quesada and Zhang, *Electrophoresis 17*:1841-1851 (1996); Baba, *Yakugaku Zasshi 117*:265-281 (1997), all of which are herein incorporated by reference in their entirety).

ESTs longer than 150 nucleotides have been found to be useful for similarity searches and mapping (Adams *et al.*, *Science 252*:1651-1656 (1991), herein incorporated by reference). ESTs, which can represent copies of up to the full length transcript, may be partially or completely sequenced. Between 150-450 nucleotides of sequence information is usually generated as this is the length of sequence information that is routinely and reliably produced using single run sequence data. Typically, only single run sequence data is obtained from the cDNA library (Adams *et al.*, *Science 252*:1651-1656 (1991). Automated single run sequencing typically results in an approximately 2-3% error or base ambiguity rate (Boguski *et al.*, *Nature Genetics 4*:332-333 (1993), the entirety of which is herein incorporated by reference).

EST databases have been constructed or partially constructed from, for example, *C. elegans* (McCombrie *et al.*, *Nature Genetics 1*:124-131 (1992)), human liver cell line HepG2 (Okubo *et al.*, *Nature Genetics 2*:173-179 (1992)), human brain RNA (Adams *et al.*, *Science 252*:1651-1656 (1991); Adams *et al.*, *Nature 355*:632-635 (1992)), *Arabidopsis,* (Newman *et al.*, *Plant Physiol.* 106:1241-1255 (1994)); and rice (Kurata *et al.*, *Nature Genetics 8*:365-372 (1994)).

IV. SEQUENCE COMPARISONS

A characteristic feature of a DNA sequence is that it can be compared with other DNA sequences. Sequence comparisons can be undertaken by determining the similarity of the test or query sequence with sequences in publicly available or proprietary databases ("similarity

analysis") or by searching for certain motifs ("intrinsic sequence analysis")(e.g. *cis* elements)(Coulson, *Trends in Biotechnology 12:*76-80 (1994), the entirety of which is herein incorporated by reference); Birren *et al., Genome Analysis 1*: Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York 543-559 (1997), the entirety of which is herein incorporated by reference).

Similarity analysis includes database search and alignment. Examples of public databases include the DNA Database of Japan (DDBJ)(http://www.ddbj.nig.ac.jp/); Genebank (http://www.ncbi.nlm.nih.gov/Web/Search/Index.htlm); and the European Molecular Biology Laboratory Nucleic Acid Sequence Database (EMBL) (http://www.ebi.ac.uk/ebi_docs/embl_db/embl-db.html). Other appropriate databases include dbEST (http://www.ncbi.nlm.nih.gov/dbEST/index.html), SwissProt (http://www.ebi.ac.uk/ebi_docs/swisprot_db/swisshome.html), PIR (http://www-nbrt.georgetown.edu/pir/) and The Institute for Genome Research (http://www.tigr.org/tdb/tdb.html)

A number of different search algorithms have been developed, one example of which are the suite of programs referred to as BLAST programs. There are five implementations of BLAST, three designed for nucleotide sequences queries (BLASTN, BLASTX and TBLASTX) and two designed for protein sequence queries (BLASTP and TBLASTN) (Coulson, *Trends in Biotechnology 12:*76-80 (1994); Birren *et al., Genome Analysis 1,* Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York 543-559 (1997)).

BLASTN takes a nucleotide sequence (the query sequence) and its reverse complement and searches them against a nucleotide sequence database. BLASTN was designed for speed, not maximum sensitivity and may not find distantly related coding sequences. BLASTX takes a

nucleotide sequence, translates it in three forward reading frames and three reverse complement reading frames and then compares the six translations against a protein sequence database. BLASTX is useful for sensitive analysis of preliminary (single-pass) sequence data and is tolerant of sequencing errors (Gish and States, *Nature Genetics 3:*266-272 (1993), the entirety of which is herein incorporated by reference). BLASTN and BLASTX may be used in concert for analyzing EST data (Coulson, *Trends in Biotechnology 12:*76-80 (1994); Birren *et al., Genome Analysis 1:*543-559 (1997)).

Given a coding nucleotide sequence and the protein it encodes, it is often preferable to use the protein as the query sequence to search a database because of the greatly increased sensitivity to detect more subtle relationships. This is due to the larger alphabet of proteins (20 amino acids) compared with the alphabet of nucleic acid sequences (4 bases), where it is far easier to obtain a match by chance. In addition, with nucleotide alignments, only a match (positive score) or a mismatch (negative score) is obtained, but with proteins, the presence of conservative amino acid substitutions can be taken into account. Here, a mismatch may yield a positive score if the non-identical residue has physical/chemical properties similar to the one it replaced. Various scoring matrices are used to supply the substitution scores of all possible amino acid pairs. A general purpose scoring system is the BLOSUM62 matrix (Henikoff and Henikoff, *Proteins 17:*49-61 (1993), the entirety of which is herein incorporated by reference), which is currently the default choice for BLAST programs. BLOSUM62 is tailored for alignments of moderately diverged sequences and thus may not yield the best results under all conditions. Altschul, *J. Mol. Biol. 36:*290-300 (1993), the entirety of which is herein incorporated by reference, describes a combination of three matrices to cover all contingencies. This may improve sensitivity, but at the expense of slower searches. In practice, a single

BLOSUM62 matrix is often used but others (PAM40 and PAM250) may be attempted when additional analysis is necessary. Low PAM matrices are directed at detecting very strong but localized sequence similarities, whereas high PAM matrices are directed at detecting long but weak alignments between very distantly related sequences.

Homologues in other organisms are available that can be used for comparative sequence analysis. Multiple alignments are performed to study similarities and differences in a group of related sequences. CLUSTAL W is a multiple sequence alignment package that performs progressive multiple sequence alignments based on the method of Feng and Doolittle, *J. Mol. Evol.* 25:351-360 (1987), the entirety of which is herein incorporated by reference. Each pair of sequences is aligned and the distance between each pair is calculated; from this distance matrix, a guide tree is calculated and all of the sequences are progressively aligned based on this tree. A feature of the program is its sensitivity to the effect of gaps on the alignment; gap penalties are varied to encourage the insertion of gaps in probable loop regions instead of in the middle of structured regions. Users can specify gap penalties, choose between a number of scoring matrices, or supply their own scoring matrix for both pairwise alignments and multiple alignments. CLUSTAL W for UNIX and VMS systems is available at: ftp.ebi.ac.uk. Another program is MACAW (Schuler *et al.*, *Proteins Struct. Func. Genet. 9:*180-190 (1991), the entirety of which is herein incorporated by reference, for which both Macintosh and Microsoft Windows versions are available. MACAW uses a graphical interface, provides a choice of several alignment algorithms and is available by anonymous ftp at: ncbi.nlm.nih.gov (directory/pub/macaw).

Sequence motifs are derived from multiple alignments and can be used to examine individual sequences or an entire database for subtle patterns. With motifs, it is sometimes

possible to detect distant relationships that may not be demonstrable based on comparisons of primary sequences alone. Currently, the largest collection of sequence motifs in the world is PROSITE (Bairoch and Bucher, *Nucleic Acid Research 22:*3583-3589 (1994), the entirety of which is herein incorporated by reference). PROSITE may be accessed via either the ExPASy server on the World Wide Web or anonymous ftp site. Many commercial sequence analysis packages also provide search programs that use PROSITE data.

A resource for searching protein motifs is the BLOCKS E-mail server developed by Henikoff, *Trends Biochem Sci. 18:*267-268 (1993), the entirety of which is herein incorporated by reference; Henikoff and Henikoff, *Nucleic Acid Research 19:*6565-6572 (1991), the entirety of which is herein incorporated by reference; Henikoff and Henikoff, *Proteins 17:*49-61 (1993). BLOCKS searches a protein or nucleotide sequence against a database of protein motifs or "blocks." Blocks are defined as short, ungapped multiple alignments that represent highly conserved protein patterns. The blocks themselves are derived from entries in PROSITE as well as other sources. Either a protein query or a nucleotide query can be submitted to the BLOCKS server; if a nucleotide sequence is submitted, the sequence is translated in all six reading frames and motifs are sought for these conceptual translations. Once the search is completed, the server will return a ranked list of significant matches, along with an alignment of the query sequence to the matched BLOCKS entries.

Conserved protein domains can be represented by two-dimensional matrices, which measure either the frequency or probability of the occurrences of each amino acid residue and deletions or insertions in each position of the domain. This type of model, when used to search against protein databases, is sensitive and usually yields more accurate results than simple motif searches. Two popular implementations of this approach are profile searches such as GCG

program ProfileSearch and Hidden Markov Models (HMMs)(Krough *et al., J. Mol. Biol. 235*:1501-1531, (1994); Eddy, *Current Opinion in Structural Biology 6:*361-365, (1996), both of which are herein incorporated by reference in their entirety). In both cases, a large number of common protein domains have been converted into profiles, as present in the PROSITE library, or HHM models, as in the Pfam protein domain library (Sonnhammer *et al., Proteins 28*:405-420 (1997), the entirety of which is herein incorporated by reference). Pfam contains more than 500 HMM models for enzymes, transcription factors, signal transduction molecules and structural proteins. Protein databases can be queried with these profiles or HMM models, which will identify proteins containing the domain of interest. For example, HMMSW or HMMFS, two programs in a public domain package called HMMER (Sonnhammer *et al., Proteins 28*:405-420 (1997)) can be used.

PROSITE and BLOCKS represent collected families of protein motifs. Thus, searching these databases entails submitting a single sequence to determine whether or not that sequence is similar to the members of an established family. Programs working in the opposite direction compare a collection of sequences with individual entries in the protein databases. An example of such a program is the Motif Search Tool, or MoST (Tatusov *et al., Proc. Natl. Acad. Sci. (U.S.A.) 91:*12091-12095 (1994), the entirety of which is herein incorporated by reference). On the basis of an aligned set of input sequences, a weight matrix is calculated by using one of four methods (selected by the user). A weight matrix is simply a representation, position by position of how likely a particular amino acid will appear. The calculated weight matrix is then used to search the databases. To increase sensitivity, newly found sequences are added to the original data set, the weight matrix is recalculated and the search is performed again. This procedure continues until no new sequences are found.

SUMMARY OF THE INVENTION

The present invention provides a substantially purified nucleic acid molecule that encodes a maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of: (a) methionine adenosyltransferase, (b) S-adenosyl-methionine decarboxylase, (c) aspartate kinase, (d) aspartate-semialdehyde dehydrogenase, (e) cystathionine gamma-synthase, (f) cystathionine beta-lysase, and (g) 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase.

The present invention also provides a substantially purified nucleic acid molecule that encodes a plant methionine pathway enzyme or fragment thereof, wherein the nucleic acid molecule is selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a

maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof.

A substantially purified maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of (a) methionine adenosyltransferase or fragment thereof; (b) S-adenosyl-methionine decarboxylase or fragment thereof; (c) aspartate kinase or fragment thereof; (d) aspartate-semialdehyde dehydrogenase or fragment thereof; (e) cystathionine gamma-synthase or fragment thereof; (f) cystathionine beta-lysase or fragment thereof; and (e) 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase or fragment thereof.

The present invention also provides a substantially purified maize or soybean methionine pathway protein or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 3204.

The present invention also provides a substantially purified maize or soybean methionine adenosyltransferase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479.

The present invention also provides a substantially purified maize or soybean methionine adenosyltransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479.

The present invention also provides a substantially purified maize or soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ ID NO: 2623.

The present invention also provides a substantially purified maize or soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ ID NO: 2623.

The present invention also provides a substantially purified maize or soybean aspartate kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648.

The present invention also provides a substantially purified maize or soybean aspartate kinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648.

The present invention also provides a substantially purified maize or soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a

complement of SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654.

The present invention also provides a substantially purified maize or soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654.

The present invention also provides a substantially purified maize or soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 905 through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660.

The present invention also provides a substantially purified maize or soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 905 through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660.

The present invention also provides a substantially purified maize or soybean cystathionine β-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2661 through SEQ ID NO: 2665.

The present invention also provides a substantially purified maize or soybean cystathionine β-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected

from the group consisting of SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2661 through SEQ ID NO: 2665.

The present invention also provides a substantially purified maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992.

The present invention also provides a substantially purified maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992.

The present invention also provides a substantially purified maize or adenosylhomocysteinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199.

The present invention also provides a substantially purified maize or adenosylhomocysteinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199.

The present invention also provides a substantially purified maize or cystathionine β-synthase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1631 through SEQ ID NO: 1632.

The present invention also provides a substantially purified maize or cystathionine β-synthase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1631 through SEQ ID NO: 1632.

The present invention also provides a substantially purified maize or cystathionine γ-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204.

The present invention also provides a substantially purified maize or cystathionine γ-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204.

The present invention also provides a substantially purified maize or *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 3200 through SEQ ID NO: 3202.

The present invention also provides a substantially purified maize or *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 3200 through SEQ ID NO: 3202.

The presesent invention also provides a purified antibody or fragment thereof which is capable of specifically binding to a specific maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme or fragment thereof is encoded by a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of consisting of SEQ ID NO: 1 through SEQ ID NO: 3204.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479 or a substantially purified maize or soybean methionine adenosyltransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ

ID NO: 2623 or a substantially purified maize or soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ ID NO: 2623.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean aspartate kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648 or a substantially purified maize or soybean aspartate kinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654 or a substantially purified maize or soybean enzyme aspartate-semialdehyde dehydrogenase or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 905 through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660 or a substantially purified maize or soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 905 through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean cystathionine β-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2661 through SEQ ID NO: 2665 or a substantially purified maize or soybean cystathionine β-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2661 through SEQ ID NO: 2665.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic

acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992 or a substantially purified maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean adenosylhomocyteinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199 or a substantially purified maize or soybean adenosylhomocyteinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean cystathionine β-synthase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1631 through SEQ ID NO: 1632 or a substantially purified maize or soybean cystathionine β-synthase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1631 through SEQ ID NO: 1632.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204 or a substantially purified maize or soybean cystathionine γ-lyase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean *O*-acetylhomoserine enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 3200 through SEQ ID NO: 3202 or a substantially purified maize or soybean *O*-acetylhomoserine enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 3200 through SEQ ID NO: 3202.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; (B) a structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of (a) a nucleic acid sequence which encodes for methionine adenosyltransferase or fragment thereof; (b) a nucleic acid sequence which encodes for S-adenosyl-methionine decarboxylase or fragment thereof; (c) a nucleic acid

sequence which encodes for aspartate kinase or fragment thereof; (d) a nucleic acid sequence which encodes for aspartate-semialdehyde dehydrogenase or fragment thereof; (e) a nucleic acid sequence which encodes for cystathionine gamma-synthase or a fragment thereof; (f) a nucleic acid sequence which encodes for cystathionine beta-lysase or a fragment thereof; (g) a nucleic acid sequence which encodes for 5-methyltetrahydropteroyl- triglutamate-homocysteine-S-methyltransferase or a fragment thereof; and (h) a nucleic acid sequence which is complementary to any of the nucleic acid sequences of (a) through (g); and (C) a 3' non-translated sequence that functions in said plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of said mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule encodes a plant methionine pathway enzyme or fragment thereof, the structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule is selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or

fragment thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or soybean aspartate kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to (B) a transcribed nucleic acid molecule with a transcribed strand and a non-transcribed strand, wherein the transcribed strand is complementary to a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof; which is

linked to (C) a 3' non-translated sequence that functions in plant cells to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to: (B) a transcribed nucleic acid molecule with a transcribed strand and a non-transcribed strand, wherein a transcribed mRNA of the transcribed strand is complementary to an endogenous mRNA molecule having a nucleic acid sequence selected from the group consisting of an endogenous mRNA molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and an endogenous mRNA molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof; which is linked to (C) a 3'

non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a method for determining a level or pattern in a plant cell of an enzyme in a plant metabolic pathway comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, said marker nucleic acid molecule selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having the nucleic acid sequence of SEQ ID NO: 1 through SEQ ID NO: 3204 or compliments thereof, with a complementary nucleic acid molecule obtained from said plant cell or plant tissue, wherein nucleic acid hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant cell or plant tissue permits the detection of an mRNA for said enzyme; (B) permitting hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant cell or plant tissue; and (C) detecting the level or pattern of said complementary nucleic acid, wherein the detection of said complementary nucleic acid is predictive of the level or pattern of said enzyme in said plant metabolic pathway.

The present invention also provides a method for determining a level or pattern of a plant methionine pathway enzyme in a plant cell or plant tissue comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complement thereof or fragment of either, with a complementary nucleic acid molecule obtained from the plant cell or plant tissue, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue permits the detection of the

plant methionine pathway enzyme; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) detecting the level or pattern of the complementary nucleic acid, wherein the detection of the complementary nucleic acid is predictive of the level or pattern of the plant methionine pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant methionine pathway enzyme in a plant cell or plant tissue comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a

soybean cytsathionine γ-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either, with a complementary nucleic acid molecule obtained from the plant cell or plant tissue, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue permits the detection of the plant methionine pathway enzyme; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) detecting the level or pattern of the complementary nucleic acid, wherein the detection of the complementary nucleic acid is predictive of the level or pattern of the plant methionine pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant methionine pathway enzyme in a plant cell or plant tissue under evaluation which comprises assaying the concentration of a molecule, whose concentration is dependent upon the expression of a gene, the gene specifically hybridizes to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof, in comparison to the concentration of that molecule present in a reference plant cell or a reference plant tissue with a known level or pattern of the plant methionine pathway enzyme, wherein the assayed concentration of the molecule is compared to the assayed concentration of the molecule in the reference plant cell or reference plant tissue with the known level or pattern of the plant methionine pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant methionine pathway enzyme in a plant cell or plant tissue under evaluation which comprises assaying the concentration of a molecule, whose concentration is dependent upon the expression

of a gene, the gene specifically hybridizes to a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocyteinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or complement thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof, in comparison to the concentration of that molecule present in a reference plant cell or a reference plant tissue with a known level or pattern of the plant methionine pathway enzyme, wherein the assayed concentration of the molecule is compared to the assayed concentration of the molecule in the reference plant cell or the reference plant tissue with the known level or pattern of the plant methionine pathway enzyme.

A method of determining a mutation in a plant whose presence is predictive of a mutation affecting a level or pattern of a protein comprising the steps: (A) incubating, under conditions

permitting nucleic acid hybridization, a marker nucleic acid, said marker nucleic acid selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having a nucleic acid sequence selected from the group of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof and a complementary nucleic acid molecule obtained from said plant, wherein nucleic acid hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting said level or pattern of said plant methionine pathway enzyme in said plant; (B) permitting hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant; and (C) detecting the presence of said polymorphism, wherein the detection of said polymorphism is predictive of said mutation.

The present invention also provides a method for determining a mutation in a plant whose presence is predictive of a mutation affecting the level or pattern of a plant methionine pathway enzyme comprising the steps: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that is linked to a gene, the gene specifically hybridizes to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof and a complementary nucleic acid molecule obtained from the plant, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting the level or pattern of the plant methionine pathway enzyme in the plant; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule

obtained from the plant; and (C) detecting the presence of the polymorphism, wherein the detection of the polymorphism is predictive of the mutation.

The present invention also provides a method for determining a mutation in a plant whose presence is predictive of a mutation affecting the level or pattern of a plant methionine pathway enzyme comprising the steps: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that is linked to a gene, the gene specifically hybridizes to a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocyteinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or complement thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof and a complementary nucleic acid molecule obtained from the plant,

wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting the level or pattern of the plant methionine pathway enzyme in the plant; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant; and (C) detecting the presence of the polymorphism, wherein the detection of the polymorphism is predictive of the mutation.

A method of producing a plant containing an overexpressed protein comprising: (A) transforming said plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein said promoter region is linked to a structural region, wherein said structural region has a nucleic acid sequence selected from group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 wherein said structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein said functional nucleic acid molecule results in overexpression of the protein; and (B) growing said transformed plant.

The present invention also provides a method of producing a plant containing an overexpressed plant methionine enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof; wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause

termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in overexpression of the plant methionine pathway enzyme; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing an overexpressed plant methionine pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof; wherein the structural region is

linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in overexpression of the plant methionine pathway enzyme protein; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing reduced levels of a plant methionine pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204; wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in co-suppression of the plant methionine pathway enzyme protein; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing reduced levels of a plant methionine pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, a

nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof; wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in co-suppression of the plant methionine pathway enzyme; and (B) growing the transformed plant.

The present invention also provides a method for reducing expression of a plant methionine pathway enzyme in a plant comprising: (A) transforming the plant with a nucleic acid molecule, the nucleic acid molecule having an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule, wherein the exogenous promoter region is linked to a transcribed nucleic acid molecule having a transcribed strand and a non-transcribed strand, wherein the transcribed strand is complementary to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof or fragments of either and the transcribed strand is complementary

to an endogenous mRNA molecule; and wherein the transcribed nucleic acid molecule is linked to a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and (B) growing the transformed plant.

The present invention also provides a method for reducing expression of a plant methionine pathway enzyme in a plant comprising: (A) transforming the plant with a nucleic acid molecule, the nucleic acid molecule having an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule, wherein the exogenous promoter region is linked to a transcribed nucleic acid molecule having a transcribed strand and a non-transcribed strand, wherein a transcribed mRNA of the transcribed strand is complementary to a nucleic acid molecule selected from the group consisting of an endogenous mRNA molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment

thereof, an endogenous mRNA molecule that encodes a maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and an endogenous mRNA molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof; and wherein the transcribed nucleic acid molecule is linked to a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and (B) growing the transformed plant.

The present invention also provides a method of determining an association between a polymorphism and a plant trait comprising: (A) hybridizing a nucleic acid molecule specific for the polymorphism to genetic material of a plant, wherein the nucleic acid molecule has a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof or fragment thereof; and (B) calculating the degree of association between the polymorphism and the plant trait.

The present invention also provides a method of determining an association between a polymorphism and a plant trait comprising: (A) hybridizing a nucleic acid molecule specific for the polymorphism to genetic material of a plant, wherein the nucleic acid molecule is selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme complement thereof or fragment of either, a

nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof or fragment of either; a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cytsathionine γ-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either and (B) calculating the degree of association between the polymorphism and the plant trait.

The present invention also provides a method of isolating a nucleic acid that encodes a plant methionine pathway enzyme or fragment thereof comprising: (A) incubating under conditions permitting nucleic acid hybridization, a first nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof or fragment of either with a complementary second nucleic acid molecule obtained from a plant cell or plant tissue; (B) permitting hybridization between the first nucleic acid molecule and the second nucleic acid molecule obtained from the plant cell or plant tissue; and (C) isolating the second nucleic acid molecule.

The present invention also provides a method of isolating a nucleic acid molecule that encodes a plant methionine pathway enzyme or fragment thereof comprising: (A) incubating under conditions permitting nucleic acid hybridization, a first nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean

methionine adenosyltransferase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cytsathionine γ-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either, with a complementary second nucleic acid molecule obtained from a plant cell or plant tissue; (B) permitting hybridization between the plant methionine pathway nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) isolating the second nucleic acid molecule.

DETAILED DESCRIPTION OF THE INVENTION

Definitions and Agents of the Present Invention

Definitions:

As used herein, a methionine pathway enzyme is any enzyme that is associated with the synthesis or degradation of methionine.

As used herein, a methionine synthesis enzyme is any enzyme that is associated with the synthesis of methionine.

As used herein, a methionine degradation enzyme is any enzyme that is associated with the degradation of methionine.

As used herein, methionine adenosyltransferase is any enzyme that catalyzes the conversion of methionine to S-adenosylmethionine.

As used herein, S-adenosylmethionine decarboxylase is any enzyme that catalyzes the reaction that converts S-adenosylmethionine to (5-deoxy-5-adenosyl)(3-aminopropyl) methylsulfonuim salt.

As used herein, aspartate kinase is any enzyme that catalyzes the conversion of aspartate to β-aspartyl phosphate.

As used herein, aspartate semialdehyde dehydrogenase is any enzyme that catalyzes the conversion of β-aspartyl phosphate to aspartate-semialdehyde via an NADPH-dependent reaction.

As used herein, *O*-succinylhomoserine (thiol)-lyase refers to any enzyme that catalyzes the conversion of *O*-phosphohomoserine to and cysteine to cystathionine.

As used herein, cystathionine β-lyase is any enzyme that catalyzes the conversion of cystathionine to homocysteine, pyruvate and ammonia.

As used herein, 5-methyltetrhydropterolytriglutamate-homocysteine S-methyltransferase refers to any enzyme which catalyzes the conversion of homocysteine via methylation to methionine.

As used herein, adenosylhomocysteinase refers to any enzyme that catalyzes the ATP-dependent conversion of S-adenosylmethionine (AdoMet) to methylthioadenosine and L-homoserine.

As used herein, cystathionine β-synthase refers to any enzyme that catalyzes the conversion of homocysteine and serine to cystathionine.

As used herein, cystathionine γ-lyase refers to any enzyme that catalyzes the γ cleavage of cystationine.

As used herein, *O*-acetyhomoserine (thiol)-lyase refers to any enzyme that catalyzes the conversion of *O*-acetylhomoserine and sulfur to homocysteine.

Agents

(a) Nucleic Acid Molecules

Agents of the present invention include plant nucleic acid molecules and more specifically include maize and soybean nucleic acid molecules and more specifically include nucleic acid molecules of the maize genotypes B73 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), B73 x Mo17 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), DK604 (Dekalb Genetics, Dekalb, Illinois U.S.A.), H99 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), RX601 (Asgrow Seed Company, Des Moines, Iowa), Mo17 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), and soybean types Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa), C1944 (United States Department of Agriculture (USDA) Soybean Germplasm Collection, Urbana, Illinois U.S.A.), Cristalina (USDA Soybean Germplasm Collection, Urbana,

Illinois U.S.A.), FT108 (Monsoy, Brazil), Hartwig (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), BW211S Null (Tohoku University, Morioka, Japan), PI507354 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), Asgrow A4922 (Asgrow Seed Company, Des Moines, Iowa U.S.A.), PI227687 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), PI229358 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and Asgrow A3237 (Asgrow Seed Company, Des Moines, Iowa U.S.A.).

A subset of the nucleic acid molecules of the present invention includes nucleic acid molecules that are marker molecules. Another subset of the nucleic acid molecules of the present invention include nucleic acid molecules that encode a protein or fragment thereof. Another subset of the nucleic acid molecules of the present invention are EST molecules.

Fragment nucleic acid molecules may encode significant portion(s) of, or indeed most of, these nucleic acid molecules. Alternatively, the fragments may comprise smaller oligonucleotides (having from about 15 to about 250 nucleotide residues and more preferably, about 15 to about 30 nucleotide residues).

As used herein, an agent, be it a naturally occurring molecule or otherwise may be "substantially purified," if desired, such that one or more molecules that is or may be present in a naturally occurring preparation containing that molecule will have been removed or will be present at a lower concentration than that at which it would normally be found.

The agents of the present invention will preferably be "biologically active" with respect to either a structural attribute, such as the capacity of a nucleic acid to hybridize to another nucleic acid molecule, or the ability of a protein to be bound by an antibody (or to compete with another molecule for such binding). Alternatively, such an attribute may be catalytic and thus involve the capacity of the agent to mediate a chemical reaction or response.

The agents of the present invention may also be recombinant. As used herein, the term recombinant means any agent (e.g. DNA, peptide etc.), that is, or results, however indirect, from human manipulation of a nucleic acid molecule.

It is understood that the agents of the present invention may be labeled with reagents that facilitate detection of the agent (e.g. fluorescent labels, Prober *et al., Science 238*:336-340 (1987); Albarella *et al.,* EP 144914; chemical labels, Sheldon *et al.,* U.S. Patent 4,582,789; Albarella *et al.,* U.S. Patent 4,563,417; modified bases, Miyoshi *et al.,* EP 119448, all of which are hereby incorporated by reference in their entirety).

It is further understood, that the present invention provides recombinant bacterial, mammalian, microbial, insect, fungal and plant cells and viral constructs comprising the agents of the present invention. (See, for example, Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants; Section (b) Fungal Constructs and Fungal Transformants; Section (c) Mammalian Constructs and Transformed Mammalian Cells; Section (d) Insect Constructs and Transformed Insect Cells; and Section (e) Bacterial Constructs and Transformed Bacterial Cells)

Nucleic acid molecules or fragments thereof of the present invention are capable of specifically hybridizing to other nucleic acid molecules under certain circumstances. As used herein, two nucleic acid molecules are said to be capable of specifically hybridizing to one another if the two molecules are capable of forming an anti-parallel, double-stranded nucleic acid structure. A nucleic acid molecule is said to be the "complement" of another nucleic acid molecule if they exhibit complete complementarity. As used herein, molecules are said to exhibit "complete complementarity" when every nucleotide of one of the molecules is complementary to a nucleotide of the other. Two molecules are said to be "minimally

complementary" if they can hybridize to one another with sufficient stability to permit them to remain annealed to one another under at least conventional "low-stringency" conditions. Similarly, the molecules are said to be "complementary" if they can hybridize to one another with sufficient stability to permit them to remain annealed to one another under conventional "high-stringency" conditions. Conventional stringency conditions are described by Sambrook *et al.*, *Molecular Cloning,* A Laboratory Manual, 2nd Ed., Cold Spring Harbor Press, Cold Spring Harbor, New York (1989) and by Haymes *et al., Nucleic Acid Hybridization, A Practical Approach*, IRL Press, Washington, DC (1985), the entirety of which is herein incorporated by reference. Departures from complete complementarity are therefore permissible, as long as such departures do not completely preclude the capacity of the molecules to form a double-stranded structure. Thus, in order for a nucleic acid molecule to serve as a primer or probe it need only be sufficiently complementary in sequence to be able to form a stable double-stranded structure under the particular solvent and salt concentrations employed.

Appropriate stringency conditions which promote DNA hybridization, for example, 6.0 X sodium chloride/sodium citrate (SSC) at about 45°C, followed by a wash of 2.0 X SSC at 50°C, are known to those skilled in the art or can be found in *Current Protocols in Molecular Biology*, John Wiley & Sons, N.Y. (1989), 6.3.1-6.3.6. For example, the salt concentration in the wash step can be selected from a low stringency of about 2.0 X SSC at 50°C to a high stringency of about 0.2 X SSC at 50°C. In addition, the temperature in the wash step can be increased from low stringency conditions at room temperature, about 22°C, to high stringency conditions at about 65°C. Both temperature and salt may be varied, or either the temperature or the salt concentration may be held constant while the other variable is changed.

In a preferred embodiment, a nucleic acid of the present invention will specifically hybridize to one or more of the nucleic acid molecules set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof under moderately stringent conditions, for example at about 2.0 X SSC and about 65°C.

In a particularly preferred embodiment, a nucleic acid of the present invention will include those nucleic acid molecules that specifically hybridize to one or more of the nucleic acid molecules set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof under high stringency conditions such as 0.2 X SSC and about 65°C.

In one aspect of the present invention, the nucleic acid molecules of the present invention have one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof. In another aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 90% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof. In a further aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 95% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof. In a more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 98% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 3204or complements thereof. In an even more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 99% sequence identity with one or more of the sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof.

In a further more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention exhibit 100% sequence identity with a nucleic acid molecule present within MONN01, SATMON001 through SATMON031, SATMON033, SATMON034, SATMON~001, SATMONN01, SATMONN04 through SATMONN006, CMz029 through CMz031, CMz033, CMz035 through CMz037, CMz039 through CMz042, CMz044 through CMz045, CMz047 through CMz050, SOYMON001 through SOYMON038, Soy51 through Soy56, Soy58 through Soy62, Soy65 through Soy66, Soy 68 through Soy73 and Soy76 through Soy77, Lib9, Lib22 through Lib25, Lib35, Lib80 through Lib81, Lib 144, Lib146, Lib147, Lib190, Lib3032 through Lib3036 and Lib3099 (Monsanto Company, St. Loius, Missouri U.S.A.).

(i) Nucleic Acid Molecules Encoding Proteins or Fragments Thereof

Nucleic acid molecules of the present invention can comprise sequences that encode a methionine pathway protein or fragment thereof. Such proteins or fragments thereof include homologues of known proteins in other organisms.

In a preferred embodiment of the present invention, a maize or soybean protein homologue or fragment thereof of the present invention is a homologue of another plant protein. In another preferred embodiment of the present invention, a maize or soybean protein homologue or fragment thereof of the present invention is a homologue of a fungal protein. In another preferred embodiment of the present invention, a maize or soybean protein homologue of the present invention is a homologue of mammalian protein. In another preferred embodiment of the present invention, a maize or soybean protein homologue or fragment thereof of the present invention is a homologue of a bacterial protein. In another preferred embodiment of the present invention, a soybean protein homologue or fragment thereof of the present invention is a

maize protein homologue or fragment thereof of the present invention is a homologue of a soybean protein.

In a preferred embodiment of the present invention, the nucleic molecule of the present invention encodes a maize or soybean homologue protein or fragment thereof where a maize or soybean homologue protein exhibits a BLAST probability score of greater than 1E-12, preferably a BLAST probability score of between about 1E-30 and about 1E-12, even more preferably a BLAST probability score of greater than 1E-30 with its homologue.

In another preferred embodiment of the present invention, the nucleic acid molecule encoding a maize or soybean protein homologue or fragment thereof or fragment thereof exhibits a % identity with its homologue of between about 25% and about 40%, more preferably of between about 40 and about 70%, even more preferably of between about 70% and about 90% and even more preferably between about 90% and 99%. In another preferred embodiment, of the present invention, a maize or soybean protein homologue or fragments thereof exhibits a % identity with its homologue of 100%.

In a preferred embodiment of the present invention, the nucleic molecule of the present invention encodes a maize or soybean homologue protein or fragment thereof where a maize or soybean homologue protein exhibits a BLAST score of greater than 120, preferably a BLAST score of between about 1450 and about 120, even more preferably a BLAST score of greater than 1450 with its homologue.

Nucleic acid molecules of the present invention also include non-maize, non-soybean homologues. Preferred non- homologues are selected from the group consisting of alfalfa, *Arabidopsis,* barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry,

sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm and *Phaseolus*.

In a preferred embodiment, nucleic acid molecules having SEQ ID NO: 1 through SEQ ID NO: 3204 or complements and fragments of either can be utilized to obtain such homologues.

The degeneracy of the genetic code, which allows different nucleic acid sequences to code for the same protein or peptide, is known in the literature. (U.S. Patent No. 4,757,006, the entirety of which is herein incorporated by reference).

In an aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding maize or soybean homologue or fragment thereof in SEQ ID NO: 1 through SEQ ID NO: 3204 due to the degeneracy in the genetic code in that they encode the same protein but differ in nucleic acid sequence.

In another further aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding maize or soybean homologue or fragment thereof in SEQ ID NO: 1 through SEQ ID NO: 3204 due to fact that the different nucleic acid sequence encodes a protein having one or more conservative amino acid residue. Examples of conservative substitutions are set forth in Table 1. It is understood that codons capable of coding for such conservative substitutions are known in the art.

Table 1

Original Residue	Conservative Substitutions
Ala	Ser
Arg	Lys

Asn	Gln; His
Asp	Glu
Cys	Ser; Ala
Gln	Asn
Glu	Asp
Gly	Pro
His	Asn; Gln
Ile	Leu; Val
Leu	Ile; Val
Lys	Arg; Gln; Glu
Met	Leu; Ile
Phe	Met; Leu; Tyr
Ser	Thr
Thr	Ser
Trp	Tyr
Tyr	Trp; Phe
Val	Ile; Leu

In a further aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding a maize or soybean homologue or fragment thereof set forth in SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof due to the fact that one or more codons encoding an amino acid has been

substituted for a codon that encodes a nonessential substitution of the amino acid originally encoded.

Agents of the present invention include nucleic acid molecules that encode a maize or soybean methionine pathway protein or fragment thereof and particularly substantially purified nucleic acid molecules selected from the group consisting of a nucleic acid molecule that encodes a maize or soybean methionine adenosyltransferase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean S-adenosylmethionine decarboxylase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean aspartate kinase protein or fragment thereof, a nucleic acid molecule that encode a maize or soybean aspartate-semialdehyde dehydrogenase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean *O*-succinylhomoserine (thiol)-lyase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean cystathionine β-lyase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean adenosylhomocysteine protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean cystathionine β-synthase protein or fragment thereof, a nucleic acid molecule that encodes a maize or soybean cystathionine γ-lyase protein or fragment thereof, and a nucleic acid molecule that encodes a maize or soybean *O*-acetylhomoserine (thiol)-lyase protein or fragment thereof.

Non-limiting examples of such nucleic acid molecules of the present invention are nucleic acid molecules comprising: SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof that encode for a methionine pathway protein or fragment thereof, SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479 or fragment thereof that

encode for a methionine adenosyltransferase protein or fragment thereof, SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ ID NO: 2623 or fragment thereof that encode for a S-adenosylmethionine decarboxylase protein or fragment thereof, SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648 or fragment thereof that encode for a aspartate kinase protein or fragment thereof, SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654 or fragment thereof that encode for a aspartate-semialdehyde dehydrogenase protein or fragment thereof, SEQ ID NO: 905through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660 or fragment thereof that encode for a *O*-succinylhomoserine (thiol)-lyase protein or fragment thereof, SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2655 through SEQ ID NO: 2660 or fragment thereof that encode for a cystathionine β-lyase protein or fragment thereof, SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992 or fragment thereof that encode for a 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase protein or fragment thereof, SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199 or fragment thereof that encode for an adenosylhomocysteinase protein or fragment thereof, SEQ ID NO: 1631 through SEQ ID NO: 1632or fragment thereof that encode for a cystathionine β-synthase protein or fragment thereof, SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204 or fragment thereof that encode for a cystathionine γ-lyase protein or fragment thereof, and SEQ ID NO: 3200 through SEQ ID NO: 3202 or fragment thereof that encode for an *O*-acetylhomoserine (thiol)-lyase protein or fragment thereof.

A nucleic acid molecule of the present invention can also encode an homologue of a maize or soybean methionine adenosyltransferase or fragment thereof, a maize or soybean S-adenosylmethionine decarboxylase or fragment thereof, a maize or soybean aspartate kinase or fragment thereof, a maize or soybean aspartate-semialdehyde dehydrogenase or fragment thereof, a maize or soybean *O*-succinylhomoserine (thiol)-lyase or fragment thereof, a maize or soybean cystathionine β-lyase or fragment thereof, a maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase or fragment thereof, a maize or soybean adenosylhomocysteinease or fragment thereof, a maize or soybean cystathionine β-synthase or fragment thereof, a maize or soybean cystathionine γ-lyase or fragment thereof or a maize or soybean *O*-acetylhomoserine (thiol)-lyase or fragment thereof. As used herein a homologue protein molecule or fragment thereof is a counterpart protein molecule or fragment thereof in a second species (*e.g.*, maize methionine adenosyltransferase protein is a homologue of *Arabidopsis'* methionine adenosyltransferase protein).

(ii) Nucleic Acid Molecule Markers and Probes

One aspect of the present invention concerns markers that include nucleic acid molecules SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof or fragments of either that can act as markers. Genetic markers of the present invention include "dominant" or "codominant" markers. "Codominant markers" reveal the presence of two or more alleles (two per diploid individual) at a locus. "Dominant markers" reveal the presence of only a single allele per locus. The presence of the dominant marker phenotype (e.g., a band of DNA) is an indication that one allele is present in either the homozygous or heterozygous condition. The absence of the dominant marker phenotype (e.g. absence of a DNA band) is merely evidence that "some other"

undefined allele is present. In the case of populations where individuals are predominantly homozygous and loci are predominately dimorphic, dominant and codominant markers can be equally valuable. As populations become more heterozygous and multi-allelic, codominant markers often become more informative of the genotype than dominant markers. Marker molecules can be, for example, capable of detecting polymorphisms such as single nucleotide polymorphisms (SNPs).

SNPs are single base changes in genomic DNA sequence. They occur at greater frequency and are spaced with a greater uniformly throughout a genome than other reported forms of polymorphism. The greater frequency and uniformity of SNPs means that there is greater probability that such a polymorphism will be found near or in a genetic locus of interest than would be the case for other polymorphisms. SNPs are located in protein-coding regions and noncoding regions of a genome. Some of these SNPs may result in defective or variant protein expression (e.g., as a results of mutations or defective splicing). Analysis (genotyping) of characterized SNPs can require only a plus/minus assay rather than a lengthy measurement, permitting easier automation.

SNPs can be characterized using any of a variety of methods. Such methods include the direct or indirect sequencing of the site, the use of restriction enzymes (Botstein *et al.*, *Am. J. Hum. Genet. 32*:314-331 (1980), the entirety of which is herein incorporated reference; Konieczny and Ausubel, *Plant J. 4*:403-410 (1993), the entirety of which is herein incorporated by reference), enzymatic and chemical mismatch assays (Myers *et al.*, *Nature 313*:495-498 (1985), the entirety of which is herein incorporated by reference), allele-specific PCR (Newton *et al.*, *Nucl. Acids Res. 17*:2503-2516 (1989), the entirety of which is herein incorporated by reference; Wu *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:2757-2760 (1989), the entirety of which

is herein incorporated by reference), ligase chain reaction (Barany, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:189-193 (1991), the entirety of which is herein incorporated by reference), single-strand conformation polymorphism analysis (Labrune *et al., Am. J. Hum. Genet. 48*: 1115-1120 (1991), the entirety of which is herein incorporated by reference), primer-directed nucleotide incorporation assays (Kuppuswami *et al., Proc. Natl. Acad. Sci. USA 88*:1143-1147 (1991), the entirety of which is herein incorporated by reference), dideoxy fingerprinting (Sarkar *et al., Genomics 13*:441-443 (1992), the entirety of which is herein incorporated by reference), solid-phase ELISA-based oligonucleotide ligation assays (Nikiforov *et al., Nucl. Acids Res. 22*:4167-4175 (1994), the entirety of which is herein incorporated by reference), oligonucleotide fluorescence-quenching assays (Livak *et al., PCR Methods Appl. 4*:357-362 (1995), the entirety of which is herein incorporated by reference), 5'-nuclease allele-specific hybridization TaqMan assay (Livak *et al., Nature Genet. 9*:341-342 (1995), the entirety of which is herein incorporated by reference), template-directed dye-terminator incorporation (TDI) assay (Chen and Kwok, *Nucl. Acids Res. 25*:347-353 (1997), the entirety of which is herein incorporated by reference), allele-specific molecular beacon assay (Tyagi *et al., Nature Biotech. 16*: 49-53 (1998), the entirety of which is herein incorporated by reference), PinPoint assay (Haff and Smirnov, *Genome Res. 7*: 378-388 (1997), the entirety of which is herein incorporated by reference) and dCAPS analysis (Neff *et al., Plant J. 14*:387-392 (1998), the entirety of which is herein incorporated by reference).

Additional markers, such as AFLP markers, RFLP markers and RAPD markers, can be utilized (Walton, *Seed World* 22-29 (July, 1993), the entirety of which is herein incorporated by reference; Burow and Blake, *Molecular Dissection of Complex Traits*, 13-29, Paterson (ed.), CRC Press, New York (1988), the entirety of which is herein incorporated by reference). DNA

markers can be developed from nucleic acid molecules using restriction endonucleases, the PCR and/or DNA sequence information. RFLP markers result from single base changes or insertions/deletions. These codominant markers are highly abundant in plant genomes, have a medium level of polymorphism and are developed by a combination of restriction endonuclease digestion and Southern blotting hybridization. CAPS are similarly developed from restriction nuclease digestion but only of specific PCR products. These markers are also codominant, have a medium level of polymorphism and are highly abundant in the genome. The CAPS result from single base changes and insertions/deletions.

Another marker type, RAPDs, are developed from DNA amplification with random primers and result from single base changes and insertions/deletions in plant genomes. They are dominant markers with a medium level of polymorphisms and are highly abundant. AFLP markers require using the PCR on a subset of restriction fragments from extended adapter primers. These markers are both dominant and codominant are highly abundant in genomes and exhibit a medium level of polymorphism.

SSRs require DNA sequence information. These codominant markers result from repeat length changes, are highly polymorphic and do not exhibit as high a degree of abundance in the genome as CAPS, AFLPs and RAPDs SNPs also require DNA sequence information. These codominant markers result from single base substitutions. They are highly abundant and exhibit a medium of polymorphism (Rafalski *et al.*, In: *Nonmammalian Genomic Analysis*, Birren and Lai (ed.), Academic Press, San Diego, CA, pp. 75-134 (1996), the entirety of which is herein incorporated by reference). It is understood that a nucleic acid molecule of the present invention may be used as a marker.

A PCR probe is a nucleic acid molecule capable of initiating a polymerase activity while in a double-stranded structure to with another nucleic acid. Various methods for determining the structure of PCR probes and PCR techniques exist in the art. Computer generated searches using programs such as Primer3 (www-genome.wi.mit.edu/cgi-bin/primer/primer3.cgi), STSPipeline (www-genome.wi.mit.edu/cgi-bin/www-STS_Pipeline), or GeneUp (Pesole *et al.*, *BioTechniques 25*:112-123 (1998) the entirety of which is herein incorporated by reference), for example, can be used to identify potential PCR primers.

It is understood that a fragment of one or more of the nucleic acid molecules of the present invention may be a probe and specifically a PCR probe.

(b) Protein and Peptide Molecules

A class of agents comprises one or more of the protein or fragments thereof or peptide molecules encoded by SEQ ID NO: 1 through SEQ ID NO: 3204 or one or more of the protein or fragment thereof and peptide molecules encoded by other nucleic acid agents of the present invention. As used herein, the term "protein molecule" or "peptide molecule" includes any molecule that comprises five or more amino acids. It is well known in the art that proteins may undergo modification, including post-translational modifications, such as, but not limited to, disulfide bond formation, glycosylation, phosphorylation, or oligomerization. Thus, as used herein, the term "protein molecule" or "peptide molecule" includes any protein molecule that is modified by any biological or non-biological process. The terms "amino acid" and "amino acids" refer to all naturally occurring L-amino acids. This definition is meant to include norleucine, ornithine, homocysteine and homoserine.

Non-limiting examples of the protein or fragment thereof of the present invention include a maize or soybean methionine pathway protein or fragment thereof; a maize or soybean

methionine adenosyltransferase or fragment thereof, a maize or soybean S-adenosylmethionine decarboxylase or fragment thereof, a maize or soybean aspartate kinase or fragment thereof, a maize or soybean aspartate-semialdehyde dehydrogenase or fragment thereof, a maize or soybean *O*-succinylhomoserine (thiol)-lyase or fragment thereof, a maize or soybean cystathionine β-lyase or fragment thereof, a maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase or fragment thereof, a maize or soybean adenosylhomocysteinase or fragment thereof, a maize or soybean cystathionine β-synthase or fragment thereof, a maize or soybean cystathionine γ-lyase or fragment thereof or a maize or soybean *O*-acetylhomoserine (thiol)-lyase or fragment thereof.

Non-limiting examples of the protein or fragment molecules of the present invention are an methionine pathway protein or fragment thereof encoded by: SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof that encode for a methionine pathway protein or fragment thereof, SEQ ID NO: 1 through SEQ ID NO: 429 and SEQ ID NO: 1635 through SEQ ID NO: 2479 or fragment thereof that encode for a methionine adenosyltransferase protein or fragment thereof, SEQ ID NO: 430 through SEQ ID NO: 857 and SEQ ID NO: 2480 through SEQ ID NO: 2623 or fragment thereof that encode for a S-adenosylmethionine decarboxylase protein or fragment thereof, SEQ ID NO: 858 through SEQ ID NO: 900 and SEQ ID NO: 2624 through SEQ ID NO: 2648 or fragment thereof that encode for a aspartate kinase protein or fragment thereof, SEQ ID NO: 901 through SEQ ID NO: 904 and SEQ ID NO: 2649 through SEQ ID NO: 2654 or fragment thereof that encode for a aspartate-semialdehyde dehydrogenase protein or fragment thereof, SEQ ID NO: 905 through SEQ ID NO: 953 and SEQ ID NO: 2655 through SEQ ID NO: 2660 or fragment thereof that encode for a *O*-succinylhomoserine (thiol)-lyase protein or

fragment thereof, SEQ ID NO: 954 through SEQ ID NO: 963 and SEQ ID NO: 2655 through SEQ ID NO: 2660 or fragment thereof that encode for a cystathionine β-lyase or fragment thereof , SEQ ID NO: 964 through SEQ ID NO: 1353 and SEQ ID NO: 2666 through SEQ ID NO: 2992 or fragment thereof that encode for a 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase protein or fragment thereof, SEQ ID NO: 1354 through SEQ ID NO: 1630 and SEQ ID NO: 2993 through SEQ ID NO: 3199 or fragment thereof that encode for an adenosylhomocysteinase protein or fragment thereof, SEQ ID NO: 1631 through SEQ ID NO: 1632or fragment thereof that encode for a cystathionine β-synthase protein or fragment thereof, SEQ ID NO: 1633 through SEQ ID NO: 1634 and SEQ ID NO: 3203 through SEQ ID NO: 3204 or fragment thereof that encode for a cystathionine γ-lyase protein or fragment thereof, and SEQ ID NO: 3200 through SEQ ID NO: 3202 or fragment thereof that encode for an *O*-acetylhomoserine (thiol)-lyase protein or fragment thereof.

One or more of the protein or fragment of peptide molecules may be produced via chemical synthesis, or more preferably, by expressing in a suitable bacterial or eucaryotic host. Suitable methods for expression are described by Sambrook *et al.*, (In: *Molecular Cloning, A Laboratory Manual, 2nd Edition, Cold Spring Harbor Press*, Cold Spring Harbor, New York (1989)), or similar texts. For example, the protein may be expressed in, for example, Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants; Section (b) Fungal Constructs and Fungal Transformants; Section (c) Mammalian Constructs and Transformed Mammalian Cells; Section (d) Insect Constructs and Transformed Insect Cells; and Section (e) Bacterial Constructs and Transformed Bacterial Cells.

A "protein fragment" is a peptide or polypeptide molecule whose amino acid sequence comprises a subset of the amino acid sequence of that protein. A protein or fragment thereof that comprises one or more additional peptide regions not derived from that protein is a "fusion" protein. Such molecules may be derivatized to contain carbohydrate or other moieties (such as keyhole limpet hemocyanin, etc.). Fusion protein or peptide molecules of the present invention are preferably produced via recombinant means.

Another class of agents comprise protein or peptide molecules or fragments or fusions thereof encoded by SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof in which conservative, non-essential or non-relevant amino acid residues have been added, replaced or deleted. Computerized means for designing modifications in protein structure are known in the art (Dahiyat and Mayo, *Science* 278:82-87 (1997), the entirety of which is herein incorporated by reference).

The protein molecules of the present invention include plant homologue proteins. An example of such a homologue is a homologue protein of a non-maize or non soybean plant species, that include but not limited to alfalfa, *Arabidopsis*, barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry, sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm, *Phaseolus* etc. Particularly preferred non-maize or non-soybean for use for the isolation of homologs would include, *Arabidopsis,* barley, cotton, oat, oilseed rape, rice, canola, ornamentals, sugarcane, sugarbeet, tomato, potato, wheat and turf grasses. Such a homologue can be obtained by any of a variety of methods. Most preferably, as indicated above, one or more of the disclosed sequences (SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof) will be

used to define a pair of primers that may be used to isolate the homologue-encoding nucleic acid molecules from any desired species. Such molecules can be expressed to yield homologues by recombinant means.

(c) Antibodies

One aspect of the present invention concerns antibodies, single-chain antigen binding molecules, or other proteins that specifically bind to one or more of the protein or peptide molecules of the present invention and their homologues, fusions or fragments. Such antibodies may be used to quantitatively or qualitatively detect the protein or peptide molecules of the present invention. As used herein, an antibody or peptide is said to "specifically bind" to a protein or peptide molecule of the present invention if such binding is not competitively inhibited by the presence of non-related molecules.

Nucleic acid molecules that encode all or part of the protein of the present invention can be expressed, via recombinant means, to yield protein or peptides that can in turn be used to elicit antibodies that are capable of binding the expressed protein or peptide. Such antibodies may be used in immunoassays for that protein. Such protein-encoding molecules, or their fragments may be a "fusion" molecule (i.e., a part of a larger nucleic acid molecule) such that, upon expression, a fusion protein is produced. It is understood that any of the nucleic acid molecules of the present invention may be expressed, via recombinant means, to yield proteins or peptides encoded by these nucleic acid molecules.

The antibodies that specifically bind proteins and protein fragments of the present invention may be polyclonal or monoclonal and may comprise intact immunoglobulins, or antigen binding portions of immunoglobulins fragments (such as (F(ab'), F(ab')$_2$), or single-chain

immunoglobulins producible, for example, via recombinant means. It is understood that practitioners are familiar with the standard resource materials which describe specific conditions and procedures for the construction, manipulation and isolation of antibodies (*see*, for example, Harlow and Lane, In: *Antibodies: A Laboratory Manual,* Cold Spring Harbor Press, Cold Spring Harbor, New York (1988), the entirety of which is herein incorporated by reference).

Murine monoclonal antibodies are particularly preferred. BALB/c mice are preferred for this purpose, however, equivalent strains may also be used. The animals are preferably immunized with approximately 25 μg of purified protein (or fragment thereof) that has been emulsified in a suitable adjuvant (such as TiterMax adjuvant (Vaxcel, Norcross, GA)). Immunization is preferably conducted at two intramuscular sites, one intraperitoneal site and one subcutaneous site at the base of the tail. An additional i.v. injection of approximately 25 μg of antigen is preferably given in normal saline three weeks later. After approximately 11 days following the second injection, the mice may be bled and the blood screened for the presence of anti-protein or peptide antibodies. Preferably, a direct binding Enzyme-Linked Immunoassay (ELISA) is employed for this purpose.

More preferably, the mouse having the highest antibody titer is given a third i.v. injection of approximately 25 μg of the same protein or fragment. The splenic leukocytes from this animal may be recovered 3 days later and then permitted to fuse, most preferably, using polyethylene glycol, with cells of a suitable myeloma cell line (such as, for example, the P3X63Ag8.653 myeloma cell line). Hybridoma cells are selected by culturing the cells under "HAT" (hypoxanthine-aminopterin-thymine) selection for about one week. The resulting clones may then be screened for their capacity to produce monoclonal antibodies ("mAbs"), preferably by direct ELISA.

In one embodiment, anti-protein or peptide monoclonal antibodies are isolated using a fusion of a protein or peptide of the present invention, or conjugate of a protein or peptide of the present invention, as immunogens. Thus, for example, a group of mice can be immunized using a fusion protein emulsified in Freund's complete adjuvant (*e.g.* approximately 50 μg of antigen per immunization). At three week intervals, an identical amount of antigen is emulsified in Freund's incomplete adjuvant and used to immunize the animals. Ten days following the third immunization, serum samples are taken and evaluated for the presence of antibody. If antibody titers are too low, a fourth booster can be employed. Polysera capable of binding the protein or peptide can also be obtained using this method.

In a preferred procedure for obtaining monoclonal antibodies, the spleens of the above-described immunized mice are removed, disrupted and immune splenocytes are isolated over a ficoll gradient. The isolated splenocytes are fused, using polyethylene glycol with BALB/c-derived HGPRT (hypoxanthine guanine phosphoribosyl transferase) deficient P3x63xAg8.653 plasmacytoma cells. The fused cells are plated into 96 well microtiter plates and screened for hybridoma fusion cells by their capacity to grow in culture medium supplemented with hypothanthine, aminopterin and thymidine for approximately 2-3 weeks.

Hybridoma cells that arise from such incubation are preferably screened for their capacity to produce an immunoglobulin that binds to a protein of interest. An indirect ELISA may be used for this purpose. In brief, the supernatants of hybridomas are incubated in microtiter wells that contain immobilized protein. After washing, the titer of bound immunoglobulin can be determined using, for example, a goat anti-mouse antibody conjugated to horseradish peroxidase. After additional washing, the amount of immobilized enzyme is determined (for example through the use of a chromogenic substrate). Such screening is performed as quickly as possible

after the identification of the hybridoma in order to ensure that a desired clone is not overgrown by non-secreting neighbor cells. Desirably, the fusion plates are screened several times since the rates of hybridoma growth vary. In a preferred sub-embodiment, a different antigenic form may be used to screen the hybridoma. Thus, for example, the splenocytes may be immunized with one immunogen, but the resulting hybridomas can be screened using a different immunogen. It is understood that any of the protein or peptide molecules of the present invention may be used to raise antibodies.

As discussed below, such antibody molecules or their fragments may be used for diagnostic purposes. Where the antibodies are intended for diagnostic purposes, it may be desirable to derivatize them, for example with a ligand group (such as biotin) or a detectable marker group (such as a fluorescent group, a radioisotope or an enzyme).

The ability to produce antibodies that bind the protein or peptide molecules of the present invention permits the identification of mimetic compounds of those molecules. A "mimetic compound" is a compound that is not that compound, or a fragment of that compound, but which nonetheless exhibits an ability to specifically bind to antibodies directed against that compound.

It is understood that any of the agents of the present invention can be substantially purified and/or be biologically active and/or recombinant.

Uses of the Agents of the Invention

Nucleic acid molecules and fragments thereof of the present invention may be employed to obtain other nucleic acid molecules from the same species (e.g., ESTs or fragment thereof from maize may be utilized to obtain other nucleic acid molecules from maize). Such nucleic acid molecules include the nucleic acid molecules that encode the complete coding sequence of a protein and promoters and flanking sequences of such molecules. In addition, such nucleic acid

molecules include nucleic acid molecules that encode for other isozymes or gene family members. Such molecules can be readily obtained by using the above-described nucleic acid molecules or fragments thereof to screen cDNA or genomic libraries obtained from maize or soybean. Methods for forming such libraries are well known in the art.

Nucleic acid molecules and fragments thereof of the present invention may also be employed to obtain nucleic acid homologues. Such homologues include the nucleic acid molecule of other plants or other organisms (*e.g.*, alfalfa, *Arabidopsis*, barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry, sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm, *Phaseolus,* etc.) including the nucleic acid molecules that encode, in whole or in part, protein homologues of other plant species or other organisms, sequences of genetic elements such as promoters and transcriptional regulatory elements. Such molecules can be readily obtained by using the above-described nucleic acid molecules or fragments thereof to screen cDNA or genomic libraries obtained from such plant species. Methods for forming such libraries are well known in the art. Such homologue molecules may differ in their nucleotide sequences from those found in one or more of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof because complete complementarity is not needed for stable hybridization. The nucleic acid molecules of the present invention therefore also include molecules that, although capable of specifically hybridizing with the nucleic acid molecules may lack "complete complementarity."

Any of a variety of methods may be used to obtain one or more of the above-described nucleic acid molecules (Zamechik *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 83*:4143-4146 (1986), the entirety of which is herein incorporated by reference; Goodchild *et al.*, *Proc. Natl. Acad. Sci.*

(U.S.A.) 85:5507-5511 (1988), the entirety of which is herein incorporated by reference; Wickstrom *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 85*:1028-1032 (1988), the entirety of which is herein incorporated by reference; Holt *et al.*, *Molec. Cell. Biol. 8*:963-973 (1988), the entirety of which is herein incorporated by reference; Gerwirtz *et al.*, *Science 242*:1303-1306 (1988), the entirety of which is herein incorporated by reference; Anfossi *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:3379-3383 (1989), the entirety of which is herein incorporated by reference; Becker *et al.*, *EMBO J. 8*:3685-3691 (1989); the entirety of which is herein incorporated by reference). Automated nucleic acid synthesizers may be employed for this purpose. In lieu of such synthesis, the disclosed nucleic acid molecules may be used to define a pair of primers that can be used with the polymerase chain reaction (Mullis *et al.*, *Cold Spring Harbor Symp. Quant. Biol. 51*:263-273 (1986); Erlich *et al.*, European Patent 50,424; European Patent 84,796; European Patent 258,017; European Patent 237,362; Mullis, European Patent 201,184; Mullis *et al.*, U.S. Patent 4,683,202; Erlich, U.S. Patent 4,582,788; and Saiki *et al.*, U.S. Patent 4,683,194, all of which are herein incorporated by reference in their entirety) to amplify and obtain any desired nucleic acid molecule or fragment.

Promoter sequence(s) and other genetic elements, including but not limited to transcriptional regulatory flanking sequences, associated with one or more of the disclosed nucleic acid sequences can also be obtained using the disclosed nucleic acid sequence provided herein. In one embodiment, such sequences are obtained by incubating EST nucleic acid molecules or preferably fragments thereof with members of genomic libraries (*e.g.* maize and soybean) and recovering clones that hybridize to the EST nucleic acid molecule or fragment thereof. In a second embodiment, methods of "chromosome walking," or inverse PCR may be used to obtain such sequences (Frohman *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 85*:8998-9002

(1988); Ohara *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:5673-5677 (1989); Pang *et al.*, *Biotechniques 22*:1046-1048 (1977); Huang *et al.*, *Methods Mol. Biol. 69*:89-96 (1997); Huang *et al.*, *Method Mol. Biol. 67*:287-294 (1997); Benkel *et al.*, *Genet. Anal. 13*:123-127 (1996); Hartl *et al.*, *Methods Mol. Biol. 58*:293-301 (1996), all of which are herein incorporated by reference in their entirety).

The nucleic acid molecules of the present invention may be used to isolate promoters of cell enhanced, cell specific, tissue enhanced, tissue specific, developmentally or environmentally regulated expression profiles. Isolation and functional analysis of the 5' flanking promoter sequences of these genes from genomic libraries, for example, using genomic screening methods and PCR techniques would result in the isolation of useful promoters and transcriptional regulatory elements. These methods are known to those of skill in the art and have been described (See, for example, Birren *et al.*, *Genome Analysis*: *Analyzing DNA*, 1, (1997), Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., the entirety of which is herein incorporated by reference). Promoters obtained utilizing the nucleic acid molecules of the present invention could also be modified to affect their control characteristics. Examples of such modifications would include but are not limited to enhanced sequences as reported in Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants. Such genetic elements could be used to enhance gene expression of new and existing traits for crop improvements.

In one sub-aspect, such an analysis is conducted by determining the presence and/or identity of polymorphism(s) by one or more of the nucleic acid molecules of the present invention and more preferably one or more of the EST nucleic acid molecule or fragment thereof which are associated with a phenotype, or a predisposition to that phenotype.

Any of a variety of molecules can be used to identify such polymorphism(s). In one embodiment, one or more of the EST nucleic acid molecules (or a sub-fragment thereof) may be employed as a marker nucleic acid molecule to identify such polymorphism(s). Alternatively, such polymorphisms can be detected through the use of a marker nucleic acid molecule or a marker protein that is genetically linked to (i.e., a polynucleotide that co-segregates with) such polymorphism(s).

In an alternative embodiment, such polymorphisms can be detected through the use of a marker nucleic acid molecule that is physically linked to such polymorphism(s). For this purpose, marker nucleic acid molecules comprising a nucleotide sequence of a polynucleotide located within 1mb of the polymorphism(s) and more preferably within 100kb of the polymorphism(s) and most preferably within 10kb of the polymorphism(s) can be employed.

The genomes of animals and plants naturally undergo spontaneous mutation in the course of their continuing evolution (Gusella, *Ann. Rev. Biochem.* *55*:831-854 (1986)). A "polymorphism" is a variation or difference in the sequence of the gene or its flanking regions that arises in some of the members of a species. The variant sequence and the "original" sequence co-exist in the species' population. In some instances, such co-existence is in stable or quasi-stable equilibrium.

A polymorphism is thus said to be "allelic," in that, due to the existence of the polymorphism, some members of a species may have the original sequence (i.e., the original "allele") whereas other members may have the variant sequence (i.e., the variant "allele"). In the simplest case, only one variant sequence may exist and the polymorphism is thus said to be di-allelic. In other cases, the species' population may contain multiple alleles and the polymorphism is termed tri-allelic, etc. A single gene may have multiple different unrelated

polymorphisms. For example, it may have a di-allelic polymorphism at one site and a multi-allelic polymorphism at another site.

The variation that defines the polymorphism may range from a single nucleotide variation to the insertion or deletion of extended regions within a gene. In some cases, the DNA sequence variations are in regions of the genome that are characterized by short tandem repeats (STRs) that include tandem di- or tri-nucleotide repeated motifs of nucleotides. Polymorphisms characterized by such tandem repeats are referred to as "variable number tandem repeat" ("VNTR") polymorphisms. VNTRs have been used in identity analysis (Weber, U.S. Patent 5,075,217; Armour *et al., FEBS Lett. 307*:113-115 (1992); Jones *et al.*, *Eur. J. Haematol. 39*:144-147 (1987); Horn *et al.*, PCT Patent Application WO91/14003; Jeffreys, European Patent Application 370,719; Jeffreys, U.S. Patent 5,175,082; Jeffreys *et al.*, *Amer. J. Hum. Genet. 39*:11-24 (1986); Jeffreys *et al.*, *Nature 316*:76-79 (1985); Gray *et al.*, *Proc. R. Acad. Soc. Lond. 243*:241-253 (1991); Moore *et al.*, *Genomics 10*:654-660 (1991); Jeffreys *et al.*, *Anim. Genet. 18*:1-15 (1987); Hillel *et al.*, *Anim. Genet. 20*:145-155 (1989); Hillel *et al.*, *Genet. 124*:783-789 (1990), all of which are herein incorporated by reference in their entirety).

The detection of polymorphic sites in a sample of DNA may be facilitated through the use of nucleic acid amplification methods. Such methods specifically increase the concentration of polynucleotides that span the polymorphic site, or include that site and sequences located either distal or proximal to it. Such amplified molecules can be readily detected by gel electrophoresis or other means.

The most preferred method of achieving such amplification employs the polymerase chain reaction ("PCR") (Mullis *et al.*, *Cold Spring Harbor Symp. Quant. Biol. 51*:263-273 (1986); Erlich *et al.*, European Patent Appln. 50,424; European Patent Appln. 84,796; European

Patent Application 258,017; European Patent Appln. 237,362; Mullis, European Patent Appln. 201,184; Mullis *et al.*, U.S. Patent No. 4,683,202; Erlich, U.S. Patent No. 4,582,788; and Saiki *et al.*, U.S. Patent No. 4,683,194), using primer pairs that are capable of hybridizing to the proximal sequences that define a polymorphism in its double-stranded form.

In lieu of PCR, alternative methods, such as the "Ligase Chain Reaction" ("LCR") may be used (Barany, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:189-193 (1991), the entirety of which is herein incorporated by reference). LCR uses two pairs of oligonucleotide probes to exponentially amplify a specific target. The sequences of each pair of oligonucleotides is selected to permit the pair to hybridize to abutting sequences of the same strand of the target. Such hybridization forms a substrate for a template-dependent ligase. As with PCR, the resulting products thus serve as a template in subsequent cycles and an exponential amplification of the desired sequence is obtained.

LCR can be performed with oligonucleotides having the proximal and distal sequences of the same strand of a polymorphic site. In one embodiment, either oligonucleotide will be designed to include the actual polymorphic site of the polymorphism. In such an embodiment, the reaction conditions are selected such that the oligonucleotides can be ligated together only if the target molecule either contains or lacks the specific nucleotide that is complementary to the polymorphic site present on the oligonucleotide. Alternatively, the oligonucleotides may be selected such that they do not include the polymorphic site (see, Segev, PCT Application WO 90/01069, the entirety of which is herein incorporated by reference).

The "Oligonucleotide Ligation Assay" ("OLA") may alternatively be employed (Landegren *et al.*, *Science 241*:1077-1080 (1988), the entirety of which is herein incorporated by reference). The OLA protocol uses two oligonucleotides which are designed to be capable of

hybridizing to abutting sequences of a single strand of a target. OLA, like LCR, is particularly suited for the detection of point mutations. Unlike LCR, however, OLA results in "linear" rather than exponential amplification of the target sequence.

Nickerson *et al.,* have described a nucleic acid detection assay that combines attributes of PCR and OLA (Nickerson *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 87*:8923-8927 (1990), the entirety of which is herein incorporated by reference). In this method, PCR is used to achieve the exponential amplification of target DNA, which is then detected using OLA. In addition to requiring multiple and separate, processing steps, one problem associated with such combinations is that they inherit all of the problems associated with PCR and OLA.

Schemes based on ligation of two (or more) oligonucleotides in the presence of nucleic acid having the sequence of the resulting "di-oligonucleotide", thereby amplifying the di-oligonucleotide, are also known (Wu *et al.*, *Genomics 4*:560-569 (1989), the entirety of which is herein incorporated by reference) and may be readily adapted to the purposes of the present invention.

Other known nucleic acid amplification procedures, such as allele-specific oligomers, branched DNA technology, transcription-based amplification systems, or isothermal amplification methods may also be used to amplify and analyze such polymorphisms (Malek *et al.*, U.S. Patent 5,130,238; Davey *et al.*, European Patent Application 329,822; Schuster *et al.*, U.S. Patent 5,169,766; Miller *et al.*, PCT Patent Application WO 89/06700; Kwoh *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:1173-1177 (1989); Gingeras *et al.*, PCT Patent Application WO 88/10315; Walker *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 89*:392-396 (1992), all of which are herein incorporated by reference in their entirety).

The identification of a polymorphism can be determined in a variety of ways. By correlating the presence or absence of it in a plant with the presence or absence of a phenotype, it is possible to predict the phenotype of that plant. If a polymorphism creates or destroys a restriction endonuclease cleavage site, or if it results in the loss or insertion of DNA (e.g., a VNTR polymorphism), it will alter the size or profile of the DNA fragments that are generated by digestion with that restriction endonuclease. As such, individuals that possess a variant sequence can be distinguished from those having the original sequence by restriction fragment analysis. Polymorphisms that can be identified in this manner are termed "restriction fragment length polymorphisms" ("RFLPs"). RFLPs have been widely used in human and plant genetic analyses (Glassberg, UK Patent Application 2135774; Skolnick *et al.*, *Cytogen. Cell Genet. 32*:58-67 (1982); Botstein *et al.*, *Ann. J. Hum. Genet. 32*:314-331 (1980); Fischer *et al.*, (PCT Application WO90/13668); Uhlen, PCT Application WO90/11369).

Polymorphisms can also be identified by Single Strand Conformation Polymorphism (SSCP) analysis. SSCP is a method capable of identifying most sequence variations in a single strand of DNA, typically between 150 and 250 nucleotides in length (Elles, *Methods in Molecular Medicine: Molecular Diagnosis of Genetic Diseases*, Humana Press (1996), the entirety of which is herein incorporated by reference); Orita *et al., Genomics 5:*874-879 (1989), the entirety of which is herein incorporated by reference). Under denaturing conditions a single strand of DNA will adopt a conformation that is uniquely dependent on its sequence conformation. This conformation usually will be different, even if only a single base is changed. Most conformations have been reported to alter the physical configuration or size sufficiently to be detectable by electrophoresis. A number of protocols have been described for SSCP including, but not limited to, Lee *et al., Anal. Biochem. 205:*289-293 (1992), the entirety of

which is herein incorporated by reference; Suzuki *et al., Anal. Biochem. 192:*82-84 (1991), the entirety of which is herein incorporated by reference; Lo *et al., Nucleic Acids Research 20:*1005-1009 (1992), the entirety of which is herein incorporated by reference; Sarkar *et al., Genomics 13:*441-443 (1992), the entirety of which is herein incorporated by reference. It is understood that one or more of the nucleic acids of the present invention, may be utilized as markers or probes to detect polymorphisms by SSCP analysis.

Polymorphisms may also be found using a DNA fingerprinting technique called amplified fragment length polymorphism (AFLP), which is based on the selective PCR amplification of restriction fragments from a total digest of genomic DNA to profile that DNA (Vos *et al.*, *Nucleic Acids Res. 23*:4407-4414 (1995), the entirety of which is herein incorporated by reference). This method allows for the specific co-amplification of high numbers of restriction fragments, which can be visualized by PCR without knowledge of the nucleic acid sequence.

AFLP employs basically three steps. Initially, a sample of genomic DNA is cut with restriction enzymes and oligonucleotide adapters are ligated to the restriction fragments of the DNA. The restriction fragments are then amplified using PCR by using the adapter and restriction sequence as target sites for primer annealing. The selective amplification is achieved by the use of primers that extend into the restriction fragments, amplifying only those fragments in which the primer extensions match the nucleotide flanking the restriction sites. These amplified fragments are then visualized on a denaturing polyacrylamide gel.

AFLP analysis has been performed on *Salix* (Beismann *et al.*, *Mol. Ecol. 6*:989-993 (1997), the entirety of which is herein incorporated by reference), *Acinetobacter* (Janssen *et al.*, *Int. J. Syst. Bacteriol. 47*:1179-1187 (1997), the entirety of which is herein incorporated by

reference), *Aeromonas popoffi* (Huys *et al.*, *Int. J. Syst. Bacteriol. 47*:1165-1171 (1997), the entirety of which is herein incorporated by reference), rice (McCouch *et al.*, *Plant Mol. Biol. 35*:89-99 (1997), the entirety of which is herein incorporated by reference; Nandi *et al.*, *Mol. Gen. Genet. 255*:1-8 (1997), the entirety of which is herein incorporated by reference; Cho *et al.*, *Genome 39*:373-378 (1996), the entirety of which is herein incorporated by reference), barley (*Hordeum vulgare*)(Simons *et al.*, *Genomics 44*:61-70 (1997), the entirety of which is herein incorporated by reference; Waugh *et al.*, *Mol. Gen. Genet. 255*:311-321 (1997), the entirety of which is herein incorporated by reference; Qi *et al.*, *Mol. Gen Genet. 254*:330-336 (1997), the entirety of which is herein incorporated by reference; Becker *et al.*, *Mol. Gen. Genet. 249*:65-73 (1995), the entirety of which is herein incorporated by reference), potato (Van der Voort *et al.*, *Mol. Gen. Genet. 255*:438-447 (1997), the entirety of which is herein incorporated by reference; Meksem *et al.*, *Mol. Gen. Genet. 249*:74-81 (1995), the entirety of which is herein incorporated by reference), *Phytophthora infestans* (Van der Lee *et al.*, *Fungal Genet. Biol. 21*:278-291 (1997), the entirety of which is herein incorporated by reference), *Bacillus anthracis* (Keim *et al.*, *J. Bacteriol. 179*:818-824 (1997), the entirety of which is herein incorporated by reference), *Astragalus cremnophylax* (Travis *et al.*, *Mol. Ecol. 5*:735-745 (1996), the entirety of which is herein incorporated by reference), *Arabidopsis* (Cnops *et al.*, *Mol. Gen. Genet. 253*:32-41 (1996), the entirety of which is herein incorporated by reference), *Escherichia coli* (Lin *et al.*, *Nucleic Acids Res. 24*:3649-3650 (1996), the entirety of which is herein incorporated by reference), *Aeromonas* (Huys *et al.*, *Int. J. Syst. Bacteriol. 46*:572-580 (1996), the entirety of which is herein incorporated by reference), nematode (Folkertsma *et al.*, *Mol. Plant Microbe Interact. 9*:47-54 (1996), the entirety of which is herein incorporated by reference), tomato (Thomas *et al.*, *Plant J. 8*:785-794 (1995), the entirety of which is herein incorporated by reference) and human (Latorra

et al., *PCR Methods Appl.* *3*:351-358 (1994), the entirety of which is herein incorporated by reference). AFLP analysis has also been used for fingerprinting mRNA (Money *et al.*, *Nucleic Acids Res.* *24*:2616-2617 (1996), the entirety of which is herein incorporated by reference; Bachem *et al.*, *Plant J.* *9*:745-753 (1996), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acids of the present invention, may be utilized as markers or probes to detect polymorphisms by AFLP analysis or for fingerprinting RNA.

Polymorphisms may also be found using random amplified polymorphic DNA (RAPD) (Williams *et al., Nucl. Acids Res.* *18*:6531-6535 (1990), the entirety of which is herein incorporated by reference) and cleaveable amplified polymorphic sequences (CAPS) (Lyamichev *et al.*, *Science* *260*:778-783 (1993), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules of the present invention, may be utilized as markers or probes to detect polymorphisms by RAPD or CAPS analysis.

Through genetic mapping, a fine scale linkage map can be developed using DNA markers and, then, a genomic DNA library of large-sized fragments can be screened with molecular markers linked to the desired trait. Molecular markers are advantageous for agronomic traits that are otherwise difficult to tag, such as resistance to pathogens, insects and nematodes, tolerance to abiotic stress, quality parameters and quantitative traits such as high yield potential.

The essential requirements for marker-assisted selection in a plant breeding program are: (1) the marker(s) should co-segregate or be closely linked with the desired trait; (2) an efficient means of screening large populations for the molecular marker(s) should be available; and (3) the screening technique should have high reproducibility across laboratories and preferably be economical to use and be user-friendly.

The genetic linkage of marker molecules can be established by a gene mapping model such as, without limitation, the flanking marker model reported by Lander and Botstein, *Genetics 121*:185-199 (1989) and the interval mapping, based on maximum likelihood methods described by Lander and Botstein, *Genetics 121*:185-199 (1989) and implemented in the software package MAPMAKER/QTL (Lincoln and Lander, *Mapping Genes Controlling Quantitative Traits Using MAPMAKER/QTL,* Whitehead Institute for Biomedical Research, Massachusetts, (1990). Additional software includes Qgene, Version 2.23 (1996), Department of Plant Breeding and Biometry, 266 Emerson Hall, Cornell University, Ithaca, NY, the manual of which is herein incorporated by reference in its entirety). Use of Qgene software is a particularly preferred approach.

A maximum likelihood estimate (MLE) for the presence of a marker is calculated, together with an MLE assuming no QTL effect, to avoid false positives. A $\log_{10}$ of an odds ratio (LOD) is then calculated as: LOD = $\log_{10}$(MLE for the presence of a QTL/MLE given no linked QTL).

The LOD score essentially indicates how much more likely the data are to have arisen assuming the presence of a QTL than in its absence. The LOD threshold value for avoiding a false positive with a given confidence, say 95%, depends on the number of markers and the length of the genome. Graphs indicating LOD thresholds are set forth in Lander and Botstein, *Genetics 121*:185-199 (1989) the entirety of which is herein incorporated by reference and further described by Arús and Moreno-González , *Plant Breeding*, Hayward *et al.,* (eds.) Chapman & Hall, London, pp. 314-331 (1993), the entirety of which is herein incorporated by reference.

Additional models can be used. Many modifications and alternative approaches to interval mapping have been reported, including the use non-parametric methods (Kruglyak and Lander, *Genetics 139:*1421-1428 (1995), the entirety of which is herein incorporated by reference). Multiple regression methods or models can be also be used, in which the trait is regressed on a large number of markers (Jansen, *Biometrics in Plant Breeding*, van Oijen and Jansen (eds.), Proceedings of the Ninth Meeting of the Eucarpia Section Biometrics in Plant Breeding, The Netherlands, pp. 116-124 (1994); Weber and Wricke, *Advances in Plant Breeding,* Blackwell, Berlin, 16 (1994), both of which is herein incorporated by reference in their entirety). Procedures combining interval mapping with regression analysis, whereby the phenotype is regressed onto a single putative QTL at a given marker interval and at the same time onto a number of markers that serve as 'cofactors,' have been reported by Jansen and Stam, *Genetics 136*:1447-1455 (1994), the entirety of which is herein incorporated by reference and Zeng, *Genetics 136*:1457-1468 (1994) the entirety of which is herein incorporated by reference. Generally, the use of cofactors reduces the bias and sampling error of the estimated QTL positions (Utz and Melchinger, *Biometrics in Plant Breeding,* van Oijen and Jansen (eds.) Proceedings of the Ninth Meeting of the Eucarpia Section Biometrics in Plant Breeding, The Netherlands, pp.195-204 (1994), the entirety of which is herein incorporated by reference, thereby improving the precision and efficiency of QTL mapping (Zeng, *Genetics 136*:1457-1468 (1994)). These models can be extended to multi-environment experiments to analyze genotype-environment interactions (Jansen *et al., Theo. Appl. Genet. 91:*33-37 (1995), the entirety of which is herein incorporated by reference).

Selection of an appropriate mapping populations is important to map construction. The choice of appropriate mapping population depends on the type of marker systems employed

(Tanksley *et al., Molecular mapping plant chromosomes. Chromosome structure and function: Impact of new concepts,* Gustafson and Appels (eds.), Plenum Press, New York, pp 157-173 (1988), the entirety of which is herein incorporated by reference). Consideration must be given to the source of parents (adapted vs. exotic) used in the mapping population. Chromosome pairing and recombination rates can be severely disturbed (suppressed) in wide crosses (adapted x exotic) and generally yield greatly reduced linkage distances. Wide crosses will usually provide segregating populations with a relatively large array of polymorphisms when compared to progeny in a narrow cross (adapted x adapted).

An F_2 population is the first generation of selfing after the hybrid seed is produced. Usually a single F_1 plant is selfed to generate a population segregating for all the genes in Mendelian (1:2:1) fashion. Maximum genetic information is obtained from a completely classified F_2 population using a codominant marker system (Mather, *Measurement of Linkage in Heredity,* Methuen and Co., (1938), the entirety of which is herein incorporated by reference). In the case of dominant markers, progeny tests (e.g. F_3, BCF_2) are required to identify the heterozygotes, thus making it equivalent to a completely classified F_2 population. However, this procedure is often prohibitive because of the cost and time involved in progeny testing. Progeny testing of F_2 individuals is often used in map construction where phenotypes do not consistently reflect genotype (e.g. disease resistance) or where trait expression is controlled by a QTL. Segregation data from progeny test populations (e.g. F_3 or BCF_2) can be used in map construction. Marker-assisted selection can then be applied to cross progeny based on marker-trait map associations (F_2, F_3), where linkage groups have not been completely disassociated by recombination events (i.e., maximum disequillibrium).

Recombinant inbred lines (RIL) (genetically related lines; usually >F_5, developed from continuously selfing F_2 lines towards homozygosity) can be used as a mapping population. Information obtained from dominant markers can be maximized by using RIL because all loci are homozygous or nearly so. Under conditions of tight linkage (i.e., about <10% recombination), dominant and co-dominant markers evaluated in RIL populations provide more information per individual than either marker type in backcross populations (Reiter *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 89*:1477-1481 (1992), the entirety of which is herein incorporated by reference). However, as the distance between markers becomes larger (i.e., loci become more independent), the information in RIL populations decreases dramatically when compared to codominant markers.

Backcross populations (e.g., generated from a cross between a successful variety (recurrent parent) and another variety (donor parent) carrying a trait not present in the former) can be utilized as a mapping population. A series of backcrosses to the recurrent parent can be made to recover most of its desirable traits. Thus a population is created consisting of individuals nearly like the recurrent parent but each individual carries varying amounts or mosaic of genomic regions from the donor parent. Backcross populations can be useful for mapping dominant markers if all loci in the recurrent parent are homozygous and the donor and recurrent parent have contrasting polymorphic marker alleles (Reiter *et al., Proc. Natl. Acad. Sci. (U.S.A.) 89*:1477-1481 (1992)). Information obtained from backcross populations using either codominant or dominant markers is less than that obtained from F_2 populations because one, rather than two, recombinant gametes are sampled per plant. Backcross populations, however, are more informative (at low marker saturation) when compared to RILs as the distance between linked loci increases in RIL populations (i.e. about 15% recombination). Increased

recombination can be beneficial for resolution of tight linkages, but may be undesirable in the construction of maps with low marker saturation.

Near-isogenic lines (NIL) created by many backcrosses to produce an array of individuals that are nearly identical in genetic composition except for the trait or genomic region under interrogation can be used as a mapping population. In mapping with NILs, only a portion of the polymorphic loci are expected to map to a selected region.

Bulk segregant analysis (BSA) is a method developed for the rapid identification of linkage between markers and traits of interest (Michelmore *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.)* *88*:9828-9832 (1991), the entirety of which is herein incorporated by reference). In BSA, two bulked DNA samples are drawn from a segregating population originating from a single cross. These bulks contain individuals that are identical for a particular trait (resistant or susceptible to particular disease) or genomic region but arbitrary at unlinked regions (i.e. heterozygous). Regions unlinked to the target region will not differ between the bulked samples of many individuals in BSA.

It is understood that one or more of the nucleic acid molecules of the present invention may be used as molecular markers. It is also understood that one or more of the protein molecules of the present invention may be used as molecular markers.

In accordance with this aspect of the present invention, a sample nucleic acid is obtained from plants cells or tissues. Any source of nucleic acid may be used. Preferably, the nucleic acid is genomic DNA. The nucleic acid is subjected to restriction endonuclease digestion. For example, one or more nucleic acid molecule or fragment thereof of the present invention can be used as a probe in accordance with the above-described polymorphic methods. The polymorphism obtained in this approach can then be cloned to identify the mutation at the coding

region which alters the protein's structure or regulatory region of the gene which affects its expression level.

In an aspect of the present invention, one or more of the nucleic molecules of the present invention are used to determine the level (i.e., the concentration of mRNA in a sample, etc.) in a plant (preferably maize or soybean) or pattern (i.e., the kinetics of expression, rate of decomposition, stability profile, etc.) of the expression of a protein encoded in part or whole by one or more of the nucleic acid molecule of the present invention (collectively, the "Expression Response" of a cell or tissue). As used herein, the Expression Response manifested by a cell or tissue is said to be "altered" if it differs from the Expression Response of cells or tissues of plants not exhibiting the phenotype. To determine whether a Expression Response is altered, the Expression Response manifested by the cell or tissue of the plant exhibiting the phenotype is compared with that of a similar cell or tissue sample of a plant not exhibiting the phenotype. As will be appreciated, it is not necessary to re-determine the Expression Response of the cell or tissue sample of plants not exhibiting the phenotype each time such a comparison is made; rather, the Expression Response of a particular plant may be compared with previously obtained values of normal plants. As used herein, the phenotype of the organism is any of one or more characteristics of an organism (e.g. disease resistance, pest tolerance, environmental tolerance such as tolerance to abiotic stress, male sterility, quality improvement or yield etc.). A change in genotype or phenotype may be transient or permanent. Also as used herein, a tissue sample is any sample that comprises more than one cell. In a preferred aspect, a tissue sample comprises cells that share a common characteristic (e.g. derived from root, seed, flower, leaf, stem or pollen etc.).

In one aspect of the present invention, an evaluation can be conducted to determine whether a particular mRNA molecule is present. One or more of the nucleic acid molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention are utilized to detect the presence or quantity of the mRNA species. Such molecules are then incubated with cell or tissue extracts of a plant under conditions sufficient to permit nucleic acid hybridization. The detection of double-stranded probe-mRNA hybrid molecules is indicative of the presence of the mRNA; the amount of such hybrid formed is proportional to the amount of mRNA. Thus, such probes may be used to ascertain the level and extent of the mRNA production in a plant's cells or tissues. Such nucleic acid hybridization may be conducted under quantitative conditions (thereby providing a numerical value of the amount of the mRNA present). Alternatively, the assay may be conducted as a qualitative assay that indicates either that the mRNA is present, or that its level exceeds a user set, predefined value.

A principle of *in situ* hybridization is that a labeled, single-stranded nucleic acid probe will hybridize to a complementary strand of cellular DNA or RNA and, under the appropriate conditions, these molecules will form a stable hybrid. When nucleic acid hybridization is combined with histological techniques, specific DNA or RNA sequences can be identified within a single cell. An advantage of *in situ* hybridization over more conventional techniques for the detection of nucleic acids is that it allows an investigator to determine the precise spatial population (Angerer *et al., Dev. Biol. 101*:477-484 (1984), the entirety of which is herein incorporated by reference; Angerer *et al., Dev. Biol. 112*:157-166 (1985), the entirety of which is herein incorporated by reference; Dixon *et al., EMBO J. 10*:1317-1324 (1991), the entirety of which is herein incorporated by reference). *In situ* hybridization may be used to measure the

steady-state level of RNA accumulation. It is a sensitive technique and RNA sequences present in as few as 5-10 copies per cell can be detected (Hardin *et al.*, *J. Mol. Biol. 202*:417-431 (1989), the entirety of which is herein incorporated by reference). A number of protocols have been devised for *in situ* hybridization, each with tissue preparation, hybridization and washing conditions (Meyerowitz, *Plant Mol. Biol. Rep. 5*:242-250 (1987), the entirety of which is herein incorporated by reference; Cox and Goldberg, In: *Plant Molecular Biology: A Practical Approach,* Shaw (ed.), pp 1-35, IRL Press, Oxford (1988), the entirety of which is herein incorporated by reference; Raikhel *et al.*, *In situ RNA hybridization in plant tissues*, In: *Plant Molecular Biology Manual*, vol. B9:1-32, Kluwer Academic Publisher, Dordrecht, Belgium (1989), the entirety of which is herein incorporated by reference).

In situ hybridization also allows for the localization of proteins within a tissue or cell (Wilkinson, *In Situ Hybridization,* Oxford University Press, Oxford (1992), the entirety of which is herein incorporated by reference; Langdale, *In Situ Hybridization* In: *The Maize Handbook,* Freeling and Walbot (eds.), pp 165-179, Springer-Verlag, New York (1994), the entirety of which is herein incorporated by reference). It is understood that one or more of the molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention or one or more of the antibodies of the present invention may be utilized to detect the level or pattern of a methionine pathway protein or mRNA thereof by *in situ* hybridization.

Fluorescent *in situ* hybridization allows the localization of a particular DNA sequence along a chromosome which is useful, among other uses, for gene mapping, following chromosomes in hybrid lines or detecting chromosomes with translocations, transversions or deletions. *In situ* hybridization has been used to identify chromosomes in several plant species

(Griffor *et al., Plant Mol. Biol. 17*:101-109 (1991), the entirety of which is herein incorporated by reference; Gustafson *et al., Proc. Natl. Acad. Sci. (U.S.A.) 87*:1899-1902 (1990), herein incorporated by reference; Mukai and Gill, *Genome 34*:448-452 (1991), the entirety of which is herein incorporated by reference; Schwarzacher and Heslop-Harrison, *Genome 34*:317-323 (1991); Wang *et al., Jpn. J. Genet. 66*:313-316 (1991), the entirety of which is herein incorporated by reference; Parra and Windle, *Nature Genetics 5*:17-21 (1993), the entirety of which is herein incorporated by reference). It is understood that the nucleic acid molecules of the present invention may be used as probes or markers to localize sequences along a chromosome.

Another method to localize the expression of a molecule is tissue printing. Tissue printing provides a way to screen, at the same time on the same membrane many tissue sections from different plants or different developmental stages. Tissue-printing procedures utilize films designed to immobilize proteins and nucleic acids. In essence, a freshly cut section of a tissue is pressed gently onto nitrocellulose paper, nylon membrane or polyvinylidene difluoride membrane. Such membranes are commercially available (*e.g.* Millipore, Bedford, Massachusetts U.S.A.). The contents of the cut cell transfer onto the membrane and the contents and are immobilized to the membrane. The immobilized contents form a latent print that can be visualized with appropriate probes. When a plant tissue print is made on nitrocellulose paper, the cell walls leave a physical print that makes the anatomy visible without further treatment (Varner and Taylor, *Plant Physiol. 91*:31-33 (1989), the entirety of which is herein incorporated by reference).

Tissue printing on substrate films is described by Daoust, *Exp. Cell Res. 12*:203-211 (1957), the entirety of which is herein incorporated by reference, who detected amylase, protease, ribonuclease and deoxyribonuclease in animal tissues using starch, gelatin and agar films. These

techniques can be applied to plant tissues (Yomo and Taylor, *Planta 112*:35-43 (1973); the entirety of which is herein incorporated by reference; Harris and Chrispeels, *Plant Physiol.* 56:292-299 (1975), the entirety of which is herein incorporated by reference). Advances in membrane technology have increased the range of applications of Daoust's tissue-printing techniques allowing (Cassab and Varner, *J. Cell. Biol. 105*:2581-2588 (1987), the entirety of which is herein incorporated by reference) the histochemical localization of various plant enzymes and deoxyribonuclease on nitrocellulose paper and nylon (Spruce *et al.*, *Phytochemistry 26:*2901-2903 (1987), the entirety of which is herein incorporated by reference; Barres *et al.*, *Neuron 5:*527-544 (1990), the entirety of which is herein incorporated by reference; Reid and Pont-Lezica, *Tissue Printing: Tools for the Study of Anatomy, Histochemistry and Gene Expression,* Academic Press, New York, New York (1992), the entirety of which is herein incorporated by reference; Reid *et al., Plant Physiol. 93:*160-165 (1990), the entirety of which is herein incorporated by reference; Ye *et al.*, *Plant J. 1:*175-183 (1991), the entirety of which is herein incorporated by reference).

It is understood that one or more of the molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention or one or more of the antibodies of the present invention may be utilized to detect the presence or quantity of a methionine pathway protein by tissue printing.

Further it is also understood that any of the nucleic acid molecules of the present invention may be used as marker nucleic acids and or probes in connection with methods that require probes or marker nucleic acids. As used herein, a probe is an agent that is utilized to determine an attribute or feature (e.g. presence or absence, location, correlation, etc.) of a molecule, cell, tissue or plant. As used herein, a marker nucleic acid is a nucleic acid molecule

that is utilized to determine an attribute or feature (*e.g.*, presence or absence, location, correlation, etc.) or a molecule, cell, tissue or plant.

A microarray-based method for high-throughput monitoring of plant gene expression may be utilized to measure gene-specific hybridization targets. This 'chip'-based approach involves using microarrays of nucleic acid molecules as gene-specific hybridization targets to quantitatively measure expression of the corresponding plant genes (Schena *et al.*, *Science 270*:467-470 (1995), the entirety of which is herein incorporated by reference; Shalon, Ph.D. Thesis, Stanford University (1996), the entirety of which is herein incorporated by reference). Every nucleotide in a large sequence can be queried at the same time. Hybridization can be used to efficiently analyze nucleotide sequences.

Several microarray methods have been described. One method compares the sequences to be analyzed by hybridization to a set of oligonucleotides representing all possible subsequences (Bains and Smith, *J. Theor. Biol. 135*:303-307 (1989), the entirety of which is herein incorporated by reference). A second method hybridizes the sample to an array of oligonucleotide or cDNA molecules. An array consisting of oligonucleotides complementary to subsequences of a target sequence can be used to determine the identity of a target sequence, measure its amount and detect differences between the target and a reference sequence. Nucleic acid molecules microarrays may also be screened with protein molecules or fragments thereof to determine nucleic acid molecules that specifically bind protein molecules or fragments thereof.

The microarray approach may be used with polypeptide targets (U.S. Patent No. 5,445,934; U.S. Patent No: 5,143,854; U.S. Patent No. 5,079,600; U.S. Patent No. 4,923,901, all of which are herein incorporated by reference in their entirety). Essentially, polypeptides are synthesized on a substrate (microarray) and these polypeptides can be screened with either

protein molecules or fragments thereof or nucleic acid molecules in order to screen for either protein molecules or fragments thereof or nucleic acid molecules that specifically bind the target polypeptides. (Fodor *et al.*, *Science 251*:767-773 (1991), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules or protein or fragments thereof of the present invention may be utilized in a microarray based method.

In a preferred embodiment of the present invention microarrays may be prepared that comprise nucleic acid molecules where such nucleic acid molecules encode at least one, preferably at least two, more preferably at least three, even more preferably at least four, five six or seven methionine pathway enzymes. In a preferred embodiment the nucleic acid molecules are selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean methionine adenosyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean S-adenosylmethionine decarboxylase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean aspartate-semialdehyde dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean *O*-succinylhomoserine (thiol)-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-lyase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a

maize or a soybean cystathionine γ-lyase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or fragment thereof.

Site directed mutagenesis may be utilized to modify nucleic acid sequences, particularly as it is a technique that allows one or more of the amino acids encoded by a nucleic acid molecule to be altered (e.g. a threonine to be replaced by a methionine). Three basic methods for site directed mutagenesis are often employed. These are cassette mutagenesis (Wells *et al.*, *Gene 34*:315-323 (1985), the entirety of which is herein incorporated by reference), primer extension (Gilliam *et al.*, *Gene 12*:129-137 (1980), the entirety of which is herein incorporated by reference; Zoller and Smith, *Methods Enzymol. 100*:468-500 (1983), the entirety of which is herein incorporated by reference; Dalbadie-McFarland *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 79*:6409-6413 (1982), the entirety of which is herein incorporated by reference) and methods based upon PCR (Scharf *et al.*, *Science 233*:1076-1078 (1986), the entirety of which is herein incorporated by reference; Higuchi *et al.*, *Nucleic Acids Res. 16*:7351-7367 (1988), the entirety of which is herein incorporated by reference). Site directed mutagenesis approaches are also described in European Patent 0 385 962, the entirety of which is herein incorporated by reference; European Patent 0 359 472, the entirety of which is herein incorporated by reference; and PCT Patent Application WO 93/07278, the entirety of which is herein incorporated by reference.

Site directed mutagenesis strategies have been applied to plants for both *in vitro* as well as *in vivo* site directed mutagenesis (Lanz *et al.*, *J. Biol. Chem. 266*:9971-9976 (1991), the entirety of which is herein incorporated by reference; Kovgan and Zhdanov, *Biotekhnologiya 5*:148-154, No. 207160n, Chemical Abstracts 110:225 (1989), the entirety of which is herein incorporated by reference; Ge *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:4037-4041 (1989), the

entirety of which is herein incorporated by reference; Zhu *et al., J. Biol. Chem. 271*:18494-18498 (1996), the entirety of which is herein incorporated by reference; Chu *et al., Biochemistry 33*:6150-6157 (1994), the entirety of which is herein incorporated by reference; Small *et al., EMBO J. 11*:1291-1296 (1992), the entirety of which is herein incorporated by reference; Cho *et al., Mol. Biotechnol. 8*:13-16 (1997), the entirety of which is herein incorporated by reference; Kita *et al., J. Biol. Chem. 271*:26529-26535 (1996), the entirety of which is herein incorporated by reference, Jin *et al., Mol. Microbiol. 7*:555-562 (1993), the entirety of which is herein incorporated by reference; Hatfield and Vierstra, *J. Biol. Chem. 267*:14799-14803 (1992), the entirety of which is herein incorporated by reference; Zhao *et al., Biochemistry 31*:5093-5099 (1992), the entirety of which is herein incorporated by reference).

Any of the nucleic acid molecules of the present invention may either be modified by site directed mutagenesis or used as, for example, nucleic acid molecules that are used to target other nucleic acid molecules for modification. It is understood that mutants with more than one altered nucleotide can be constructed using techniques that practitioners are familiar with such as isolating restriction fragments and ligating such fragments into an expression vector (*see,* for example, Sambrook *et al., Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press (1989)).

Sequence-specific DNA-binding proteins play a role in the regulation of transcription. The isolation of recombinant cDNAs encoding these proteins facilitates the biochemical analysis of their structural and functional properties. Genes encoding such DNA-binding proteins have been isolated using classical genetics (Vollbrecht *et al., Nature 350*: 241-243 (1991), the entirety of which is herein incorporated by reference) and molecular biochemical approaches, including the screening of recombinant cDNA libraries with antibodies (Landschulz *et al., Genes Dev.*

2:786-800 (1988), the entirety of which is herein incorporated by reference) or DNA probes (Bodner *et al.*, *Cell 55*:505-518 (1988), the entirety of which is herein incorporated by reference). In addition, an *in situ* screening procedure has been used and has facilitated the isolation of sequence-specific DNA-binding proteins from various plant species (Gilmartin *et al., Plant Cell 4*:839-849 (1992), the entirety of which is herein incorporated by reference; Schindler *et al., EMBO J. 11*:1261-1273 (1992), the entirety of which is herein incorporated by reference). An *in situ* screening protocol does not require the purification of the protein of interest (Vinson *et al.*, *Genes Dev. 2*:801-806 (1988), the entirety of which is herein incorporated by reference; Singh *et al., Cell 52*:415-423 (1988), the entirety of which is herein incorporated by reference).

Two steps may be employed to characterize DNA-protein interactions. The first is to identify promoter fragments that interact with DNA-binding proteins, to titrate binding activity, to determine the specificity of binding and to determine whether a given DNA-binding activity can interact with related DNA sequences (Sambrook *et al., Molecular Cloning: A Laboratory Manual*, 2nd edition, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York (1989)). Electrophoretic mobility-shift assay is a widely used assay. The assay provides a rapid and sensitive method for detecting DNA-binding proteins based on the observation that the mobility of a DNA fragment through a nondenaturing, low-ionic strength polyacrylamide gel is retarded upon association with a DNA-binding protein (Fried and Crother, *Nucleic Acids Res. 9*:6505-6525 (1981), the entirety of which is herein incorporated by reference). When one or more specific binding activities have been identified, the exact sequence of the DNA bound by the protein may be determined. Several procedures for characterizing protein/DNA-binding sites are used, including methylation and ethylation interference assays (Maxam and Gilbert, *Methods*

Enzymol. 65:499-560 (1980), the entirety of which is herein incorporated by reference; Wissman and Hillen, *Methods Enzymol. 208*:365-379 (1991), the entirety of which is herein incorporated by reference), footprinting techniques employing DNase I (Galas and Schmitz, *Nucleic Acids Res. 5*:3157-3170 (1978), the entirety of which is herein incorporated by reference), 1,10-phenanthroline-copper ion methods (Sigman *et al., Methods Enzymol. 208*:414-433 (1991), the entirety of which is herein incorporated by reference) and hydroxyl radicals methods (Dixon *et al., Methods Enzymol. 208*:414-433 (1991), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules of the present invention may be utilized to identify a protein or fragment thereof that specifically binds to a nucleic acid molecule of the present invention. It is also understood that one or more of the protein molecules or fragments thereof of the present invention may be utilized to identify a nucleic acid molecule that specifically binds to it.

A two-hybrid system is based on the fact that many cellular functions are carried out by proteins, such as transcription factors, that interact (physically) with one another. Two-hybrid systems have been used to probe the function of new proteins (Chien *et al., Proc. Natl. Acad. Sci. (U.S.A.) 88*:9578-9582 (1991) the entirety of which is herein incorporated by reference; Durfee *et al., Genes Dev. 7*:555-569 (1993) the entirety of which is herein incorporated by reference; Choi *et al., Cell 78*:499-512 (1994), the entirety of which is herein incorporated by reference; Kranz *et al., Genes Dev. 8*:313-327 (1994), the entirety of which is herein incorporated by reference).

Interaction mating techniques have facilitated a number of two-hybrid studies of protein-protein interaction. Interaction mating has been used to examine interactions between small sets of tens of proteins (Finley and Brent, *Proc. Natl. Acad. Sci. (U.S.A.) 91*:12098-12984 (1994), the entirety of which is herein incorporated by reference), larger sets of hundreds of proteins

(Bendixen *et al., Nucl. Acids Res. 22*:1778-1779 (1994), the entirety of which is herein incorporated by reference) and to comprehensively map proteins encoded by a small genome (Bartel *et al., Nature Genetics 12*:72-77 (1996), the entirety of which is herein incorporated by reference). This technique utilizes proteins fused to the DNA-binding domain and proteins fused to the activation domain. They are expressed in two different haploid yeast strains of opposite mating type and the strains are mated to determine if the two proteins interact. Mating occurs when haploid yeast strains come into contact and result in the fusion of the two haploids into a diploid yeast strain. An interaction can be determined by the activation of a two-hybrid reporter gene in the diploid strain. An advantage of this technique is that it reduces the number of yeast transformations needed to test individual interactions. It is understood that the protein-protein interactions of protein or fragments thereof of the present invention may be investigated using the two-hybrid system and that any of the nucleic acid molecules of the present invention that encode such proteins or fragments thereof may be used to transform yeast in the two-hybrid system.

(a) Plant Constructs and Plant Transformants

One or more of the nucleic acid molecules of the present invention may be used in plant transformation or transfection. Exogenous genetic material may be transferred into a plant cell and the plant cell regenerated into a whole, fertile or sterile plant. Exogenous genetic material is any genetic material, whether naturally occurring or otherwise, from any source that is capable of being inserted into any organism. Such genetic material may be transferred into either monocotyledons and dicotyledons including, but not limited to maize (pp 63-69), soybean (pp

50-60), *Arabidopsis* (p 45*)*, phaseolus (pp 47-49), peanut (pp 49-50), alfalfa (p 60), wheat (pp 69-71), rice (pp 72-79), oat (pp 80-81), sorghum (p 83), rye (p 84), tritordeum (p 84), millet (p85), fescue (p 85), perennial ryegrass (p 86), sugarcane (p87), cranberry (p101), papaya (pp 101-102), banana (p 103), banana (p 103), muskmelon (p 104), apple (p 104), cucumber (p 105), dendrobium (p 109), gladiolus (p 110), chrysanthemum (p 110), liliacea (p 111), cotton (pp113-114), eucalyptus (p 115), sunflower (p 118), canola (p 118), turfgrass (p121), sugarbeet (p 122), coffee (p 122) and dioscorea (p 122), (Christou, In: *Particle Bombardment for Genetic Engineering of Plants,* Biotechnology Intelligence Unit. Academic Press, San Diego, California (1996), the entirety of which is herein incorporated by reference).

Transfer of a nucleic acid that encodes for a protein can result in overexpression of that protein in a transformed cell or transgenic plant. One or more of the proteins or fragments thereof encoded by nucleic acid molecules of the present invention may be overexpressed in a transformed cell or transformed plant. Particularly, any of the methionine pathway proteins or fragments thereof may be overexpressed in a transformed cell or transgenic plant. Such overexpression may be the result of transient or stable transfer of the exogenous genetic material.

Exogenous genetic material may be transferred into a plant cell and the plant cell by the use of a DNA vector or construct designed for such a purpose. Design of such a vector is generally within the skill of the art (*See*, *Plant Molecular Biology: A Laboratory Manual*, Clark (ed.), Springier, New York (1997), the entirety of which is herein incorporated by reference).

A construct or vector may include a plant promoter to express the protein or protein fragment of choice. A number of promoters which are active in plant cells have been described in the literature. These include the nopaline synthase (NOS) promoter (Ebert *et al*., *Proc. Natl. Acad. Sci. (U.S.A.) 84*:5745-5749 (1987), the entirety of which is herein incorporated by

reference), the octopine synthase (OCS) promoter (which are carried on tumor-inducing plasmids of *Agrobacterium tumefaciens*), the caulimovirus promoters such as the cauliflower mosaic virus (CaMV) 19S promoter (Lawton *et al., Plant Mol. Biol. 9*:315-324 (1987), the entirety of which is herein incorporated by reference) and the CAMV 35S promoter (Odell *et al., Nature 313*:810-812 (1985), the entirety of which is herein incorporated by reference), the figwort mosaic virus 35S-promoter, the light-inducible promoter from the small subunit of ribulose-1,5-bis-phosphate carboxylase (ssRUBISCO), the Adh promoter (Walker *et al., Proc. Natl. Acad. Sci. (U.S.A.) 84*:6624-6628 (1987), the entirety of which is herein incorporated by reference), the sucrose synthase promoter (Yang *et al., Proc. Natl. Acad. Sci. (U.S.A.) 87*:4144-4148 (1990), the entirety of which is herein incorporated by reference), the R gene complex promoter (Chandler *et al., The Plant Cell 1*:1175-1183 (1989), the entirety of which is herein incorporated by reference) and the chlorophyll a/b binding protein gene promoter, etc. These promoters have been used to create DNA constructs which have been expressed in plants; *see, e.g.*, PCT publication WO 84/02913, herein incorporated by reference in its entirety.

Promoters which are known or are found to cause transcription of DNA in plant cells can be used in the present invention. Such promoters may be obtained from a variety of sources such as plants and plant viruses. It is preferred that the particular promoter selected should be capable of causing sufficient expression to result in the production of an effective amount of the methionine pathway protein to cause the desired phenotype. In addition to promoters that are known to cause transcription of DNA in plant cells, other promoters may be identified for use in the current invention by screening a plant cDNA library for genes which are selectively or preferably expressed in the target tissues or cells.

For the purpose of expression in source tissues of the plant, such as the leaf, seed, root or stem, it is preferred that the promoters utilized in the present invention have relatively high expression in these specific tissues. For this purpose, one may choose from a number of promoters for genes with tissue- or cell-specific or -enhanced expression. Examples of such promoters reported in the literature include the chloroplast glutamine synthetase GS2 promoter from pea (Edwards *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 87*:3459-3463 (1990), herein incorporated by reference in its entirety), the chloroplast fructose-1,6-biphosphatase (FBPase) promoter from wheat (Lloyd *et al.*, *Mol. Gen. Genet. 225*:209-216 (1991), herein incorporated by reference in its entirety), the nuclear photosynthetic ST-LS1 promoter from potato (Stockhaus *et al.*, *EMBO J. 8*:2445-2451 (1989), herein incorporated by reference in its entirety), the serine/threonine kinase (PAL) promoter and the glucoamylase (CHS) promoter from *Arabidopsis thaliana*. Also reported to be active in photosynthetically active tissues are the ribulose-1,5-bisphosphate carboxylase (RbcS) promoter from eastern larch (*Larix laricina*), the promoter for the *cab* gene, cab6, from pine (Yamamoto *et al.*, *Plant Cell Physiol. 35*:773-778 (1994), herein incorporated by reference in its entirety), the promoter for the Cab-1 gene from wheat (Fejes *et al.*, *Plant Mol. Biol. 15*:921-932 (1990), herein incorporated by reference in its entirety), the promoter for the CAB-1 gene from spinach (Lubberstedt *et al.*, *Plant Physiol. 104*:997-1006 (1994), herein incorporated by reference in its entirety), the promoter for the cab1R gene from rice (Luan *et al.*, *Plant Cell. 4*:971-981 (1992), the entirety of which is herein incorporated by reference), the pyruvate, orthophosphate dikinase (PPDK) promoter from maize (Matsuoka *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 90*: 9586-9590 (1993), herein incorporated by reference in its entirety), the promoter for the tobacco Lhcb1*2 gene (Cerdan *et al.*, *Plant Mol. Biol. 33*:245-255 (1997), herein incorporated by reference in its entirety), the *Arabidopsis thaliana* SUC2 sucrose-

H+ symporter promoter (Truernit *et al.*, *Planta. 196*:564-570 (1995), herein incorporated by reference in its entirety) and the promoter for the thylakoid membrane proteins from spinach (psaD, psaF, psaE, PC, FNR, atpC, atpD, cab, rbcS). Other promoters for the chlorophyll a/b-binding proteins may also be utilized in the present invention, such as the promoters for LhcB gene and PsbP gene from white mustard (*Sinapis alba*; Kretsch *et al.*, *Plant Mol. Biol. 28*:219-229 (1995), the entirety of which is herein incorporated by reference).

For the purpose of expression in sink tissues of the plant, such as the tuber of the potato plant, the fruit of tomato, or the seed of maize, wheat, rice and barley, it is preferred that the promoters utilized in the present invention have relatively high expression in these specific tissues. A number of promoters for genes with tuber-specific or -enhanced expression are known, including the class I patatin promoter (Bevan *et al.*, *EMBO J. 8*:1899-1906 (1986); Jefferson *et al.*, *Plant Mol. Biol. 14*:995-1006 (1990), both of which are herein incorporated by reference in its entirety), the promoter for the potato tuber ADPGPP genes, both the large and small subunits, the sucrose synthase promoter (Salanoubat and Belliard, *Gene. 60*:47-56 (1987), Salanoubat and Belliard, *Gene. 84*:181-185 (1989), both of which are incorporated by reference in their entirety), the promoter for the major tuber proteins including the 22 kd protein complexes and proteinase inhibitors (Hannapel, *Plant Physiol. 101*:703-704 (1993), herein incorporated by reference in its entirety), the promoter for the granule bound starch synthase gene (GBSS) (Visser *et al.*, *Plant Mol. Biol. 17*:691-699 (1991), herein incorporated by reference in its entirety) and other class I and II patatins promoters (Koster-Topfer *et al.*, *Mol Gen Genet. 219*:390-396 (1989); Mignery *et al.*, *Gene. 62*:27-44 (1988), both of which are herein incorporated by reference in their entirety).

Other promoters can also be used to express a methionine pathway protein or fragment thereof in specific tissues, such as seeds or fruits. The promoter for β-conglycinin (Chen *et al.*, *Dev. Genet. 10*: 112-122 (1989), herein incorporated by reference in its entirety) or other seed-specific promoters such as the napin and phaseolin promoters, can be used. The zeins are a group of storage proteins found in maize endosperm. Genomic clones for zein genes have been isolated (Pedersen *et al.*, *Cell 29*:1015-1026 (1982), herein incorporated by reference in its entirety) and the promoters from these clones, including the 15 kD, 16 kD, 19 kD, 22 kD, 27 kD and γ genes, could also be used. Other promoters known to function, for example, in maize include the promoters for the following genes: *waxy, Brittle, Shrunken 2*, Branching enzymes I and II, starch synthases, debranching enzymes, oleosins, glutelins and sucrose synthases. A particularly preferred promoter for maize endosperm expression is the promoter for the glutelin gene from rice, more particularly the Osgt-1 promoter (Zheng *et al.*, *Mol. Cell Biol. 13*:5829-5842 (1993), herein incorporated by reference in its entirety). Examples of promoters suitable for expression in wheat include those promoters for the ADPglucose pyrosynthase (ADPGPP) subunits, the granule bound and other starch synthase, the branching and debranching enzymes, the embryogenesis-abundant proteins, the gliadins and the glutenins. Examples of such promoters in rice include those promoters for the ADPGPP subunits, the granule bound and other starch synthase, the branching enzymes, the debranching enzymes, sucrose synthases and the glutelins. A particularly preferred promoter is the promoter for rice glutelin, Osgt-1. Examples of such promoters for barley include those for the ADPGPP subunits, the granule bound and other starch synthase, the branching enzymes, the debranching enzymes, sucrose synthases, the hordeins, the embryo globulins and the aleurone specific proteins.

Root specific promoters may also be used. An example of such a promoter is the promoter for the acid chitinase gene (Samac *et al.*, *Plant Mol. Biol. 25*:587-596 (1994), the entirety of which is herein incorporated by reference). Expression in root tissue could also be accomplished by utilizing the root specific subdomains of the CaMV35S promoter that have been identified (Lam *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:7890-7894 (1989), herein incorporated by reference in its entirety). Other root cell specific promoters include those reported by Conkling *et al.* (Conkling *et al.*, *Plant Physiol. 93*:1203-1211 (1990), the entirety of which is herein incorporated by reference).

Additional promoters that may be utilized are described, for example, in U.S. Patent Nos. 5,378,619; 5,391,725; 5,428,147; 5,447,858; 5,608,144; 5,608,144; 5,614,399; 5,633,441; 5,633,435; and 4,633,436, all of which are herein incorporated in their entirety. In addition, a tissue specific enhancer may be used (Fromm *et al.*, *The Plant Cell 1*:977-984 (1989), the entirety of which is herein incorporated by reference).

Constructs or vectors may also include with the coding region of interest a nucleic acid sequence that acts, in whole or in part, to terminate transcription of that region. For example, such sequences have been isolated including the Tr7 3' sequence and the NOS 3' sequence (Ingelbrecht *et al.*, *The Plant Cell 1*:671-680 (1989), the entirety of which is herein incorporated by reference; Bevan *et al.*, *Nucleic Acids Res. 11*:369-385 (1983), the entirety of which is herein incorporated by reference), or the like.

A vector or construct may also include regulatory elements. Examples of such include the Adh intron 1 (Callis *et al.*, *Genes and Develop. 1*:1183-1200 (1987), the entirety of which is herein incorporated by reference), the sucrose synthase intron (Vasil *et al.*, Plant Physiol. 91:1575-1579 (1989), the entirety of which is herein incorporated by reference) and the TMV

omega element (Gallie *et al.*, *The Plant Cell 1*:301-311 (1989), the entirety of which is herein incorporated by reference). These and other regulatory elements may be included when appropriate.

A vector or construct may also include a selectable marker. Selectable markers may also be used to select for plants or plant cells that contain the exogenous genetic material. Examples of such include, but are not limited to, a neo gene (Potrykus *et al.*, *Mol. Gen. Genet. 199*:183-188 (1985), the entirety of which is herein incorporated by reference) which codes for kanamycin resistance and can be selected for using kanamycin, G418, etc.; a bar gene which codes for bialaphos resistance; a mutant EPSP synthase gene (Hinchee *et al.*, *Bio/Technology 6*:915-922 (1988), the entirety of which is herein incorporated by reference) which encodes glyphosate resistance; a nitrilase gene which confers resistance to bromoxynil (Stalker *et al.*, *J. Biol. Chem. 263*:6310-6314 (1988), the entirety of which is herein incorporated by reference); a mutant acetolactate synthase gene (ALS) which confers imidazolinone or sulphonylurea resistance (European Patent Application 154,204 (Sept. 11, 1985), the entirety of which is herein incorporated by reference); and a methotrexate resistant DHFR gene (Thillet *et al.*, *J. Biol. Chem. 263*:12500-12508 (1988), the entirety of which is herein incorporated by reference).

A vector or construct may also include a transit peptide. Incorporation of a suitable chloroplast transit peptide may also be employed (European Patent Application Publication Number 0218571, the entirety of which is herein incorporated by reference). Translational enhancers may also be incorporated as part of the vector DNA. DNA constructs could contain one or more 5' non-translated leader sequences which may serve to enhance expression of the gene products from the resulting mRNA transcripts. Such sequences may be derived from the promoter selected to express the gene or can be specifically modified to increase translation of

the mRNA. Such regions may also be obtained from viral RNAs, from suitable eukaryotic genes, or from a synthetic gene sequence. For a review of optimizing expression of transgenes, see Koziel *et al., Plant Mol. Biol. 32*:393-405 (1996), the entirety of which is herein incorporated by reference.

A vector or construct may also include a screenable marker. Screenable markers may be used to monitor expression. Exemplary screenable markers include a β-glucuronidase or uidA gene (GUS) which encodes an enzyme for which various chromogenic substrates are known (Jefferson, *Plant Mol. Biol, Rep. 5*:387-405 (1987), the entirety of which is herein incorporated by reference; Jefferson *et al., EMBO J. 6*:3901-3907 (1987), the entirety of which is herein incorporated by reference); an R-locus gene, which encodes a product that regulates the production of anthocyanin pigments (red color) in plant tissues (Dellaporta *et al.*, Stadler Symposium *11*:263-282 (1988), the entirety of which is herein incorporated by reference); a β-lactamase gene (Sutcliffe *et al., Proc. Natl. Acad. Sci. (U.S.A.) 75*:3737-3741 (1978), the entirety of which is herein incorporated by reference), a gene which encodes an enzyme for which various chromogenic substrates are known (e.g., PADAC, a chromogenic cephalosporin); a luciferase gene (Ow *et al., Science 234*:856-859 (1986), the entirety of which is herein incorporated by reference); a xylE gene (Zukowsky *et al., Proc. Natl. Acad. Sci. (U.S.A.) 80*:1101-1105 (1983), the entirety of which is herein incorporated by reference) which encodes a catechol diozygenase that can convert chromogenic catechols; an α-amylase gene (Ikatu *et al., Bio/Technol. 8*:241-242 (1990), the entirety of which is herein incorporated by reference); a tyrosinase gene (Katz *et al., J. Gen. Microbiol. 129*:2703-2714 (1983), the entirety of which is herein incorporated by reference) which encodes an enzyme capable of oxidizing tyrosine to

DOPA and dopaquinone which in turn condenses to melanin; an α-galactosidase, which will turn a chromogenic α-galactose substrate.

Included within the terms "selectable or screenable marker genes" are also genes which encode a secretable marker whose secretion can be detected as a means of identifying or selecting for transformed cells. Examples include markers which encode a secretable antigen that can be identified by antibody interaction, or even secretable enzymes which can be detected catalytically. Secretable proteins fall into a number of classes, including small, diffusible proteins which are detectable, (*e.g.*, by ELISA), small active enzymes which are detectable in extracellular solution (*e.g.*, α-amylase, β-lactamase, phosphinothricin transferase), or proteins which are inserted or trapped in the cell wall (such as proteins which include a leader sequence such as that found in the expression unit of extension or tobacco PR-S). Other possible selectable and/or screenable marker genes will be apparent to those of skill in the art.

There are many methods for introducing transforming nucleic acid molecules into plant cells. Suitable methods are believed to include virtually any method by which nucleic acid molecules may be introduced into a cell, such as by *Agrobacterium* infection or direct delivery of nucleic acid molecules such as, for example, by PEG-mediated transformation, by electroporation or by acceleration of DNA coated particles, etc (Potrykus, *Ann. Rev. Plant Physiol. Plant Mol. Biol. 42*:205-225 (1991), the entirety of which is herein incorporated by reference; Vasil, *Plant Mol. Biol. 25*:925-937 (1994), the entirety of which is herein incorporated by reference). For example, electroporation has been used to transform maize protoplasts (Fromm *et al.*, *Nature 312*:791-793 (1986), the entirety of which is herein incorporated by reference).

Other vector systems suitable for introducing transforming DNA into a host plant cell include but are not limited to binary artificial chromosome (BIBAC) vectors (Hamilton *et al., Gene 200*:107-116 (1997), the entirety of which is herein incorporated by reference); and transfection with RNA viral vectors (Della-Cioppa *et al., Ann. N.Y. Acad. Sci.* (1996), 792 (Engineering Plants for Commercial Products and Applications), 57-61, the entirety of which is herein incorporated by reference). Additional vector systems also include plant selectable YAC vectors such as those described in Mullen *et al., Molecular Breeding 4*:449-457 (1988), the entireity of which is herein incorporated by reference).

Technology for introduction of DNA into cells is well known to those of skill in the art. Four general methods for delivering a gene into cells have been described: (1) chemical methods (Graham and van der Eb, *Virology* 54:536-539 (1973), the entirety of which is herein incorporated by reference); (2) physical methods such as microinjection (Capecchi, *Cell* 22:479-488 (1980), the entirety of which is herein incorporated by reference), electroporation (Wong and Neumann, *Biochem. Biophys. Res. Commun. 107*:584-587 (1982); Fromm *et al., Proc. Natl. Acad. Sci. (U.S.A.) 82*:5824-5828 (1985); U.S. Patent No. 5,384,253, all of which are herein incorporated in their entirety); and the gene gun (Johnston and Tang, *Methods Cell Biol. 43*:353-365 (1994), the entirety of which is herein incorporated by reference); (3) viral vectors (Clapp, *Clin. Perinatol. 20*:155-168 (1993); Lu *et al., J. Exp. Med. 178*:2089-2096 (1993); Eglitis and Anderson, *Biotechniques 6*:608-614 (1988), all of which are herein incorporated in their entirety); and (4) receptor-mediated mechanisms (Curiel *et al., Hum. Gen. Ther. 3*:147-154 (1992), Wagner *et al., Proc. Natl. Acad. Sci. (USA) 89*:6099-6103 (1992), both of which are incorporated by reference in their entirety).

Acceleration methods that may be used include, for example, microprojectile bombardment and the like. One example of a method for delivering transforming nucleic acid molecules to plant cells is microprojectile bombardment. This method has been reviewed by Yang and Christou (eds.), *Particle Bombardment Technology for Gene Transfer*, Oxford Press, Oxford, England (1994), the entirety of which is herein incorporated by reference). Non-biological particles (microprojectiles) that may be coated with nucleic acids and delivered into cells by a propelling force. Exemplary particles include those comprised of tungsten, gold, platinum and the like.

A particular advantage of microprojectile bombardment, in addition to it being an effective means of reproducibly transforming monocots, is that neither the isolation of protoplasts (Cristou *et al.*, *Plant Physiol. 87*:671-674 (1988), the entirety of which is herein incorporated by reference) nor the susceptibility of *Agrobacterium* infection are required. An illustrative embodiment of a method for delivering DNA into maize cells by acceleration is a biolistics α-particle delivery system, which can be used to propel particles coated with DNA through a screen, such as a stainless steel or Nytex screen, onto a filter surface covered with corn cells cultured in suspension. Gordon-Kamm *et al.,* describes the basic procedure for coating tungsten particles with DNA (Gordon-Kamm *et al.*, *Plant Cell 2*:603-618 (1990), the entirety of which is herein incorporated by reference). The screen disperses the tungsten nucleic acid particles so that they are not delivered to the recipient cells in large aggregates. A particle delivery system suitable for use with the present invention is the helium acceleration PDS-1000/He gun is available from Bio-Rad Laboratories (Bio-Rad, Hercules, California)(Sanford *et al.*, *Technique 3*:3-16 (1991), the entirety of which is herein incorporated by reference).

For the bombardment, cells in suspension may be concentrated on filters. Filters containing the cells to be bombarded are positioned at an appropriate distance below the microprojectile stopping plate. If desired, one or more screens are also positioned between the gun and the cells to be bombarded.

Alternatively, immature embryos or other target cells may be arranged on solid culture medium. The cells to be bombarded are positioned at an appropriate distance below the microprojectile stopping plate. If desired, one or more screens are also positioned between the acceleration device and the cells to be bombarded. Through the use of techniques set forth herein one may obtain up to 1000 or more foci of cells transiently expressing a marker gene. The number of cells in a focus which express the exogenous gene product 48 hours post-bombardment often range from one to ten and average one to three.

In bombardment transformation, one may optimize the pre-bombardment culturing conditions and the bombardment parameters to yield the maximum numbers of stable transformants. Both the physical and biological parameters for bombardment are important in this technology. Physical factors are those that involve manipulating the DNA/microprojectile precipitate or those that affect the flight and velocity of either the macro- or microprojectiles. Biological factors include all steps involved in manipulation of cells before and immediately after bombardment, the osmotic adjustment of target cells to help alleviate the trauma associated with bombardment and also the nature of the transforming DNA, such as linearized DNA or intact supercoiled plasmids. It is believed that pre-bombardment manipulations are especially important for successful transformation of immature embryos.

In another alternative embodiment, plastids can be stably transformed. Methods disclosed for plastid transformation in higher plants include the particle gun delivery of DNA

containing a selectable marker and targeting of the DNA to the plastid genome through homologous recombination (Svab *et al., Proc. Natl. Acad. Sci. (U.S.A.) 87*:8526-8530 (1990); Svab and Maliga, *Proc. Natl. Acad. Sci. (U.S.A.) 90:*913-917 (1993); Staub and Maliga, *EMBO J. 12:*601-606 (1993); U.S. Patents 5, 451,513 and 5,545,818, all of which are herein incorporated by reference in their entirety).

Accordingly, it is contemplated that one may wish to adjust various aspects of the bombardment parameters in small scale studies to fully optimize the conditions. One may particularly wish to adjust physical parameters such as gap distance, flight distance, tissue distance and helium pressure. One may also minimize the trauma reduction factors by modifying conditions which influence the physiological state of the recipient cells and which may therefore influence transformation and integration efficiencies. For example, the osmotic state, tissue hydration and the subculture stage or cell cycle of the recipient cells may be adjusted for optimum transformation. The execution of other routine adjustments will be known to those of skill in the art in light of the present disclosure.

Agrobacterium-mediated transfer is a widely applicable system for introducing genes into plant cells because the DNA can be introduced into whole plant tissues, thereby bypassing the need for regeneration of an intact plant from a protoplast. The use of *Agrobacterium*-mediated plant integrating vectors to introduce DNA into plant cells is well known in the art. See, for example the methods described by Fraley *et al., Bio/Technology 3*:629-635 (1985) and Rogers *et al., Methods Enzymol. 153*:253-277 (1987), both of which are herein incorporated by reference in their entirety. Further, the integration of the Ti-DNA is a relatively precise process resulting in few rearrangements. The region of DNA to be transferred is defined by the border sequences and

intervening DNA is usually inserted into the plant genome as described (Spielmann *et al., Mol. Gen. Genet. 205*:34 (1986), the entirety of which is herein incorporated by reference).

Modern *Agrobacterium* transformation vectors are capable of replication in E. *coli* as well as *Agrobacterium*, allowing for convenient manipulations as described (Klee *et al.,* In: *Plant DNA Infectious Agents*, Hohn and Schell (eds.), Springer-Verlag, New York, pp. 179-203 (1985), the entirety of which is herein incorporated by reference. Moreover, technological advances in vectors for *Agrobacterium*-mediated gene transfer have improved the arrangement of genes and restriction sites in the vectors to facilitate construction of vectors capable of expressing various polypeptide coding genes. The vectors described have convenient multi-linker regions flanked by a promoter and a polyadenylation site for direct expression of inserted polypeptide coding genes and are suitable for present purposes (Rogers *et al., Methods Enzymol. 153*:253-277 (1987)). In addition, *Agrobacterium* containing both armed and disarmed Ti genes can be used for the transformations. In those plant strains where *Agrobacterium*-mediated transformation is efficient, it is the method of choice because of the facile and defined nature of the gene transfer.

A transgenic plant formed using *Agrobacterium* transformation methods typically contains a single gene on one chromosome. Such transgenic plants can be referred to as being heterozygous for the added gene. More preferred is a transgenic plant that is homozygous for the added structural gene; *i.e.*, a transgenic plant that contains two added genes, one gene at the same locus on each chromosome of a chromosome pair. A homozygous transgenic plant can be obtained by sexually mating (selfing) an independent segregant transgenic plant that contains a single added gene, germinating some of the seed produced and analyzing the resulting plants produced for the gene of interest.

It is also to be understood that two different transgenic plants can also be mated to produce offspring that contain two independently segregating added, exogenous genes. Selfing of appropriate progeny can produce plants that are homozygous for both added, exogenous genes that encode a polypeptide of interest. Back-crossing to a parental plant and out-crossing with a non-transgenic plant are also contemplated, as is vegetative propagation.

Transformation of plant protoplasts can be achieved using methods based on calcium phosphate precipitation, polyethylene glycol treatment, electroporation and combinations of these treatments (*See, for example*, Potrykus *et al., Mol. Gen. Genet. 205*:193-200 (1986); Lorz *et al., Mol. Gen. Genet. 199*:178 (1985); Fromm *et al., Nature 319*:791 (1986); Uchimiya *et al., Mol. Gen. Genet. 204*:204 (1986); Marcotte *et al., Nature 335*:454-457 (1988), all of which are herein incorporated by reference in their entirety).

Application of these systems to different plant strains depends upon the ability to regenerate that particular plant strain from protoplasts. Illustrative methods for the regeneration of cereals from protoplasts are described (Fujimura *et al., Plant Tissue Culture Letters 2*:74 (1985); Toriyama *et al., Theor Appl. Genet. 205*:34 (1986); Yamada *et al., Plant Cell Rep. 4*:85 (1986); Abdullah *et al., Biotechnolog 4*:1087 (1986), all of which are herein incorporated by reference in their entirety).

To transform plant strains that cannot be successfully regenerated from protoplasts, other ways to introduce DNA into intact cells or tissues can be utilized. For example, regeneration of cereals from immature embryos or explants can be effected as described (Vasil, *Biotechnology 6*:397 (1988), the entirety of which is herein incorporated by reference). In addition, "particle gun" or high-velocity microprojectile technology can be utilized (Vasil *et al., Bio/Technology 10*:667 (1992), the entirety of which is herein incorporated by reference).

Using the latter technology, DNA is carried through the cell wall and into the cytoplasm on the surface of small metal particles as described (Klein *et al., Nature 328:*70 (1987); Klein *et al., Proc. Natl. Acad. Sci. (U.S.A.) 85*:8502-8505 (1988); McCabe *et al., Bio/Technology 6:923* (1988), all of which are herein incorporated by reference in their entirety). The metal particles penetrate through several layers of cells and thus allow the transformation of cells within tissue explants.

Other methods of cell transformation can also be used and include but are not limited to introduction of DNA into plants by direct DNA transfer into pollen (Zhou *et al., Methods Enzymol. 101:*433 (1983); Hess *et al., Intern Rev. Cytol. 107:*367 (1987); Luo *et al., Plant Mol Biol. Reporter 6:*165 (1988), all of which are herein incorporated by reference in their entirety), by direct injection of DNA into reproductive organs of a plant (Pena *et al., Nature 325*:274 (1987), the entirety of which is herein incorporated by reference), or by direct injection of DNA into the cells of immature embryos followed by the rehydration of desiccated embryos (Neuhaus *et al., Theor. Appl. Genet. 75*:30 (1987), the entirety of which is herein incorporated by reference).

The regeneration, development and cultivation of plants from single plant protoplast transformants or from various transformed explants is well known in the art (Weissbach and Weissbach, In: *Methods for Plant Molecular Biology*, Academic Press, San Diego, CA, (1988), the entirety of which is herein incorporated by reference). This regeneration and growth process typically includes the steps of selection of transformed cells, culturing those individualized cells through the usual stages of embryonic development through the rooted plantlet stage. Transgenic embryos and seeds are similarly regenerated. The resulting transgenic rooted shoots are thereafter planted in an appropriate plant growth medium such as soil.

The development or regeneration of plants containing the foreign, exogenous gene that encodes a protein of interest is well known in the art. Preferably, the regenerated plants are self-pollinated to provide homozygous transgenic plants. Otherwise, pollen obtained from the regenerated plants is crossed to seed-grown plants of agronomically important lines. Conversely, pollen from plants of these important lines is used to pollinate regenerated plants. A transgenic plant of the present invention containing a desired polypeptide is cultivated using methods well known to one skilled in the art.

There are a variety of methods for the regeneration of plants from plant tissue. The particular method of regeneration will depend on the starting plant tissue and the particular plant species to be regenerated.

Methods for transforming dicots, primarily by use of *Agrobacterium tumefaciens* and obtaining transgenic plants have been published for cotton (U.S. Patent No. 5,004,863; U.S. Patent No. 5,159,135; U.S. Patent No. 5,518,908, all of which are herein incorporated by reference in their entirety); soybean (U.S. Patent No. 5,569,834; U.S. Patent No. 5,416,011; McCabe *et. al., Biotechnology 6:*923 (1988); Christou *et al., Plant Physiol. 87*:671-674 (1988); all of which are herein incorporated by reference in their entirety); *Brassica* (U.S. Patent No. 5,463,174, the entirety of which is herein incorporated by reference); peanut (Cheng *et al., Plant Cell Rep. 15:*653-657 (1996), McKently *et al., Plant Cell Rep. 14:*699-703 (1995), all of which are herein incorporated by reference in their entirety); papaya; and pea (Grant *et al., Plant Cell Rep. 15*:254-258 (1995), the entirety of which is herein incorporated by reference).

Transformation of monocotyledons using electroporation, particle bombardment and *Agrobacterium* have also been reported. Transformation and plant regeneration have been achieved in asparagus (Bytebier *et al., Proc. Natl. Acad. Sci. (USA) 84*:5354 (1987), the entirety

of which is herein incorporated by reference); barley (Wan and Lemaux, *Plant Physiol 104*:37 (1994), the entirety of which is herein incorporated by reference); maize (Rhodes *et al., Science 240*:204 (1988); Gordon-Kamm *et al., Plant Cell* 2:603-618 (1990); Fromm *et al., Bio/Technology 8*:833 (1990); Koziel *et al., Bio/Technology 11*:194 (1993); Armstrong *et al., Crop Science 35*:550-557 (1995); all of which are herein incorporated by reference in their entirety); oat (Somers *et al., Bio/Technology 10*:1589 (1992), the entirety of which is herein incorporated by reference); orchard grass (Horn *et al., Plant Cell Rep. 7*:469 (1988), the entirety of which is herein incorporated by reference); rice (Toriyama *et al., Theor Appl. Genet. 205*:34 (1986); Part *et al., Plant Mol. Biol. 32*:1135-1148 (1996); Abedinia *et al., Aust. J. Plant Physiol. 24*:133-141 (1997); Zhang and Wu, *Theor. Appl. Genet. 76*:835 (1988); Zhang *et al., Plant Cell Rep. 7*:379 (1988); Battraw and Hall, *Plant Sci. 86*:191-202 (1992); Christou *et al., Bio/Technology 9*:957 (1991), all of which are herein incorporated by reference in their entirety); rye (De la Pena *et al., Nature 325*:274 (1987), the entirety of which is herein incorporated by reference); sugarcane (Bower and Birch, *Plant J. 2*:409 (1992), the entirety of which is herein incorporated by reference); tall fescue (Wang *et al., Bio/Technology 10*:691 (1992), the entirety of which is herein incorporated by reference) and wheat (Vasil *et al., Bio/Technology 10*:667 (1992), the entirety of which is herein incorporated by reference; U.S. Patent No. 5,631,152, the entirety of which is herein incorporated by reference.)

Assays for gene expression based on the transient expression of cloned nucleic acid constructs have been developed by introducing the nucleic acid molecules into plant cells by polyethylene glycol treatment, electroporation, or particle bombardment (Marcotte *et al., Nature 335*:454-457 (1988), the entirety of which is herein incorporated by reference; Marcotte *et al., Plant Cell 1*:523-532 (1989), the entirety of which is herein incorporated by reference; McCarty

*et al., Cell 66:*895-905 (1991), the entirety of which is herein incorporated by reference; Hattori *et al., Genes Dev. 6:*609-618 (1992), the entirety of which is herein incorporated by reference; Goff *et al., EMBO J. 9:*2517-2522 (1990), the entirety of which is herein incorporated by reference). Transient expression systems may be used to functionally dissect gene constructs (*see generally*, Mailga *et al., Methods in Plant Molecular Biology,* Cold Spring Harbor Press (1995)).

Any of the nucleic acid molecules of the present invention may be introduced into a plant cell in a permanent or transient manner in combination with other genetic elements such as vectors, promoters, enhancers etc. Further, any of the nucleic acid molecules of the present invention may be introduced into a plant cell in a manner that allows for overexpression of the protein or fragment thereof encoded by the nucleic acid molecule.

Cosuppression is the reduction in expression levels, usually at the level of RNA, of a particular endogenous gene or gene family by the expression of a homologous sense construct that is capable of transcribing mRNA of the same strandedness as the transcript of the endogenous gene (Napoli *et al., Plant Cell 2*:279-289 (1990), the entirety of which is herein incorporated by reference; van der Krol *et al., Plant Cell 2*:291-299 (1990), the entirety of which is herein incorporated by reference). Cosuppression may result from stable transformation with a single copy nucleic acid molecule that is homologous to a nucleic acid sequence found with the cell (Prolls and Meyer, *Plant J. 2:*465-475 (1992), the entirety of which is herein incorporated by reference) or with multiple copies of a nucleic acid molecule that is homologous to a nucleic acid sequence found with the cell (Mittlesten *et al., Mol. Gen. Genet. 244:*325-330 (1994), the entirety of which is herein incorporated by reference). Genes, even though different, linked to

homologous promoters may result in the cosuppression of the linked genes (Vaucheret, *C.R. Acad. Sci. III 316:*1471-1483 (1993), the entirety of which is herein incorporated by reference).

This technique has, for example, been applied to generate white flowers from red petunia and tomatoes that do not ripen on the vine. Up to 50% of petunia transformants that contained a sense copy of the glucoamylase (CHS) gene produced white flowers or floral sectors; this was as a result of the post-transcriptional loss of mRNA encoding CHS (Flavell, *Proc. Natl. Acad. Sci. (U.S.A.) 91*:3490-3496 (1994), the entirety of which is herein incorporated by reference); van Blokland *et al., Plant J. 6*:861-877 (1994), the entirety of which is herein incorporated by reference). Cosuppression may require the coordinate transcription of the transgene and the endogenous gene and can be reset by a developmental control mechanism (Jorgensen, *Trends Biotechnol. 8*:340-344 (1990), the entirety of which is herein incorporated by reference; Meins and Kunz, In: *Gene Inactivation and Homologous Recombination in Plants*, Paszkowski (ed.), pp. 335-348, Kluwer Academic, Netherlands (1994), the entirety of which is herein incorporated by reference).

It is understood that one or more of the nucleic acids of the present invention may be introduced into a plant cell and transcribed using an appropriate promoter with such transcription resulting in the cosuppression of an endogenous methionine pathway protein.

Antisense approaches are a way of preventing or reducing gene function by targeting the genetic material (Mol *et al., FEBS Lett. 268*:427-430 (1990), the entirety of which is herein incorporated by reference). The objective of the antisense approach is to use a sequence complementary to the target gene to block its expression and create a mutant cell line or organism in which the level of a single chosen protein is selectively reduced or abolished. Antisense techniques have several advantages over other 'reverse genetic' approaches. The site

of inactivation and its developmental effect can be manipulated by the choice of promoter for antisense genes or by the timing of external application or microinjection. Antisense can manipulate its specificity by selecting either unique regions of the target gene or regions where it shares homology to other related genes (Hiatt *et al.,* In: *Genetic Engineering,* Setlow (ed.), Vol. 11, New York: Plenum 49-63 (1989), the entirety of which is herein incorporated by reference).

The principle of regulation by antisense RNA is that RNA that is complementary to the target mRNA is introduced into cells, resulting in specific RNA:RNA duplexes being formed by base pairing between the antisense substrate and the target mRNA (Green *et al.*, *Annu. Rev. Biochem.* *55*:569-597 (1986), the entirety of which is herein incorporated by reference). Under one embodiment, the process involves the introduction and expression of an antisense gene sequence. Such a sequence is one in which part or all of the normal gene sequences are placed under a promoter in inverted orientation so that the 'wrong' or complementary strand is transcribed into a noncoding antisense RNA that hybridizes with the target mRNA and interferes with its expression (Takayama and Inouye, *Crit. Rev. Biochem. Mol. Biol.* *25*:155-184 (1990), the entirety of which is herein incorporated by reference). An antisense vector is constructed by standard procedures and introduced into cells by transformation, transfection, electroporation, microinjection, infection, etc. The type of transformation and choice of vector will determine whether expression is transient or stable. The promoter used for the antisense gene may influence the level, timing, tissue, specificity, or inducibility of the antisense inhibition.

It is understood that the activity of a methionine pathway protein in a plant cell may be reduced or depressed by growing a transformed plant cell containing a nucleic acid molecule whose non-transcribed strand encodes a methionine pathway protein or fragment thereof.

Antibodies have been expressed in plants (Hiatt *et al., Nature 342:*76-78 (1989), the entirety of which is herein incorporated by reference; Conrad and Fielder, *Plant Mol. Biol. 26:*1023-1030 (1994), the entirety of which is herein incorporated by reference). Cytoplamsic expression of a scFv (single-chain Fv antibodies) has been reported to delay infection by artichoke mottled crinkle virus. Transgenic plants that express antibodies directed against endogenous proteins may exhibit a physiological effect (Philips *et al., EMBO J. 16:*4489-4496 (1997), the entirety of which is herein incorporated by reference; Marion-Poll, *Trends in Plant Science 2:*447-448 (1997), the entirety of which is herein incorporated by reference). For example, expressed anti-abscisic antibodies have been reported to result in a general perturbation of seed development (Philips *et al., EMBO J. 16:* 4489-4496 (1997)).

Antibodies that are catalytic may also be expressed in plants (abzymes). The principle behind abzymes is that since antibodies may be raised against many molecules, this recognition ability can be directed toward generating antibodies that bind transition states to force a chemical reaction forward (Persidas, *Nature Biotechnology 15:*1313-1315 (1997), the entirety of which is herein incorporated by reference; Baca *et al., Ann. Rev. Biophys. Biomol. Struct. 26:*461-493 (1997), the entirety of which is herein incorporated by reference). The catalytic abilities of abzymes may be enhanced by site directed mutagenesis. Examples of abzymes are, for example, set forth in U.S. Patent No: 5,658,753; U.S. Patent No. 5,632,990; U.S. Patent No. 5,631,137; U.S. Patent 5,602,015; U.S. Patent No. 5,559,538; U.S. Patent No. 5,576,174; U.S. Patent No. 5,500,358; U.S. Patent 5,318,897; U.S. Patent No. 5,298,409; U.S. Patent No. 5,258,289 and U.S. Patent No. 5,194,585, all of which are herein incorporated in their entirety.

It is understood that any of the antibodies of the present invention may be expressed in plants and that such expression can result in a physiological effect. It is also understood that any of the expressed antibodies may be catalytic.

(b) Fungal Constructs and Fungal Transformants

The present invention also relates to a fungal recombinant vector comprising exogenous genetic material. The present invention also relates to a fungal cell comprising a fungal recombinant vector. The present invention also relates to methods for obtaining a recombinant fungal host cell comprising introducing into a fungal host cell exogenous genetic material.

Exogenous genetic material may be transferred into a fungal cell. In a preferred embodiment the exogenous genetic material includes a nucleic acid molecule of the present invention having a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof or fragments of either. The fungal recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures. The choice of a vector will typically depend on the compatibility of the vector with the fungal host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the fungal host.

The fungal vector may be an autonomously replicating vector, *i.e.*, a vector which exists as an extrachromosomal entity, the replication of which is independent of chromosomal replication, *e.g.*, a plasmid, an extrachromosomal element, a minichromosome, or an artificial chromosome. The vector may contain any means for assuring self-replication. Alternatively, the vector may be one which, when introduced into the fungal cell, is integrated into the genome and replicated together with the chromosome(s) into which it has been integrated. For integration,

the vector may rely on the nucleic acid sequence of the vector for stable integration of the vector into the genome by homologous or nonhomologous recombination. Alternatively, the vector may contain additional nucleic acid sequences for directing integration by homologous recombination into the genome of the fungal host. The additional nucleic acid sequences enable the vector to be integrated into the host cell genome at a precise location(s) in the chromosome(s). To increase the likelihood of integration at a precise location, there should be preferably two nucleic acid sequences which individually contain a sufficient number of nucleic acids, preferably 400bp to 1500bp, more preferably 800bp to 1000bp, which are highly homologous with the corresponding target sequence to enhance the probability of homologous recombination. These nucleic acid sequences may be any sequence that is homologous with a target sequence in the genome of the fungal host cell and, furthermore, may be non-encoding or encoding sequences.

For autonomous replication, the vector may further comprise an origin of replication enabling the vector to replicate autonomously in the host cell in question. Examples of origin of replications for use in a yeast host cell are the 2 micron origin of replication and the combination of CEN3 and ARS 1. Any origin of replication may be used which is compatible with the fungal host cell of choice.

The fungal vectors of the present invention preferably contain one or more selectable markers which permit easy selection of transformed cells. A selectable marker is a gene the product of which provides, for example biocide or viral resistance, resistance to heavy metals, prototrophy to auxotrophs and the like. The selectable marker may be selected from the group including, but not limited to, *amdS* (acetamidase), *argB* (ornithine carbamoyltransferase), *bar* (phosphinothricin acetyltransferase), hygB (hygromycin phosphotransferase), *niaD* (nitrate

reductase), *pyrG* (orotidine-5'-phosphate decarboxylase) and *sC* (sulfate adenyltransferase) and *trpC* (anthranilate synthase). Preferred for use in an *Aspergillus* cell are the *amdS* and *pyrG* markers of *Aspergillus nidulans* or *Aspergillus oryzae* and the bar marker of *Streptomyces hygroscopicus*. Furthermore, selection may be accomplished by co-transformation, *e.g.*, as described in WO 91/17243, the entirety of which is herein incorporated by reference. A nucleic acid sequence of the present invention may be operably linked to a suitable promoter sequence. The promoter sequence is a nucleic acid sequence which is recognized by the fungal host cell for expression of the nucleic acid sequence. The promoter sequence contains transcription and translation control sequences which mediate the expression of the protein or fragment thereof.

A promoter may be any nucleic acid sequence which shows transcriptional activity in the fungal host cell of choice and may be obtained from genes encoding polypeptides either homologous or heterologous to the host cell. Examples of suitable promoters for directing the transcription of a nucleic acid construct of the invention in a filamentous fungal host are promoters obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Rhizomucor miehei* aspartic proteinase, *Aspergillus niger* neutral alpha-amylase, *Aspergillus niger* acid stable alpha-amylase, *Aspergillus niger* or *Aspergillus awamori* glucoamylase (glaA), *Rhizomucor miehei* lipase, *Aspergillus oryzae* alkaline protease, *Aspergillus oryzae* triose phosphate isomerase, *Aspergillus nidulans* acetamidase and hybrids thereof. In a yeast host, a useful promoter is the *Saccharomyces cerevisiae* enolase (eno-1) promoter. Particularly preferred promoters are the TAKA amylase, NA2-tpi (a hybrid of the promoters from the genes encoding *Aspergillus niger* neutral alpha -amylase and *Aspergillus oryzae* triose phosphate isomerase) and glaA promoters.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be operably linked to a terminator sequence at its 3' terminus. The terminator sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any terminator which is functional in the fungal host cell of choice may be used in the present invention, but particularly preferred terminators are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Aspergillus niger* glucoamylase, *Aspergillus nidulans* anthranilate synthase, *Aspergillus niger* alpha-glucosidase and *Saccharomyces cerevisiae* enolase.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be operably linked to a suitable leader sequence. A leader sequence is a nontranslated region of a mRNA which is important for translation by the fungal host. The leader sequence is operably linked to the 5' terminus of the nucleic acid sequence encoding the protein or fragment thereof. The leader sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any leader sequence which is functional in the fungal host cell of choice may be used in the present invention, but particularly preferred leaders are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase and *Aspergillus oryzae* triose phosphate isomerase.

A polyadenylation sequence may also be operably linked to the 3' terminus of the nucleic acid sequence of the present invention. The polyadenylation sequence is a sequence which when transcribed is recognized by the fungal host to add polyadenosine residues to transcribed mRNA. The polyadenylation sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any polyadenylation sequence which is functional in the fungal host of choice may be used in the present invention, but particularly

preferred polyadenylation sequences are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Aspergillus niger* glucoamylase, *Aspergillus nidulans* anthranilate synthase and *Aspergillus niger* alpha-glucosidase.

To avoid the necessity of disrupting the cell to obtain the protein or fragment thereof and to minimize the amount of possible degradation of the expressed protein or fragment thereof within the cell, it is preferred that expression of the protein or fragment thereof gives rise to a product secreted outside the cell. To this end, a protein or fragment thereof of the present invention may be linked to a signal peptide linked to the amino terminus of the protein or fragment thereof. A signal peptide is an amino acid sequence which permits the secretion of the protein or fragment thereof from the fungal host into the culture medium. The signal peptide may be native to the protein or fragment thereof of the invention or may be obtained from foreign sources. The 5' end of the coding sequence of the nucleic acid sequence of the present invention may inherently contain a signal peptide coding region naturally linked in translation reading frame with the segment of the coding region which encodes the secreted protein or fragment thereof. Alternatively, the 5' end of the coding sequence may contain a signal peptide coding region which is foreign to that portion of the coding sequence which encodes the secreted protein or fragment thereof. The foreign signal peptide may be required where the coding sequence does not normally contain a signal peptide coding region. Alternatively, the foreign signal peptide may simply replace the natural signal peptide to obtain enhanced secretion of the desired protein or fragment thereof. The foreign signal peptide coding region may be obtained from a glucoamylase or an amylase gene from an *Aspergillus* species, a lipase or proteinase gene from *Rhizomucor miehei*, the gene for the alpha-factor from *Saccharomyces cerevisiae*, or the calf preprochymosin gene. An effective signal peptide for fungal host cells is the *Aspergillus*

oryzae TAKA amylase signal, *Aspergillus niger* neutral amylase signal, the *Rhizomucor miehei* aspartic proteinase signal, the *Humicola lanuginosus* cellulase signal, or the *Rhizomucor miehei* lipase signal. However, any signal peptide capable of permitting secretion of the protein or fragment thereof in a fungal host of choice may be used in the present invention.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be linked to a propeptide coding region. A propeptide is an amino acid sequence found at the amino terminus of aproprotein or proenzyme. Cleavage of the propeptide from the proprotein yields a mature biochemically active protein. The resulting polypeptide is known as a propolypeptide or proenzyme (or a zymogen in some cases). Propolypeptides are generally inactive and can be converted to mature active polypeptides by catalytic or autocatalytic cleavage of the propeptide from the propolypeptide or proenzyme. The propeptide coding region may be native to the protein or fragment thereof or may be obtained from foreign sources. The foreign propeptide coding region may be obtained from the *Saccharomyces cerevisiae* alpha-factor gene or *Myceliophthora thermophila* laccase gene (WO 95/33836, the entirety of which is herein incorporated by reference).

The procedures used to ligate the elements described above to construct the recombinant expression vector of the present invention are well known to one skilled in the art (see, for example, Sambrook *et al.*, *Molecular Cloning, A Laboratory Manual*, 2nd ed., Cold Spring Harbor, N.Y., (1989)).

The present invention also relates to recombinant fungal host cells produced by the methods of the present invention which are advantageously used with the recombinant vector of the present invention. The cell is preferably transformed with a vector comprising a nucleic acid sequence of the invention followed by integration of the vector into the host chromosome. The

choice of fungal host cells will to a large extent depend upon the gene encoding the protein or fragment thereof and its source. The fungal host cell may, for example, be a yeast cell or a filamentous fungal cell.

"Yeast" as used herein includes *Ascosporogenous* yeast (*Endomycetales*), *Basidiosporogenous* yeast and yeast belonging to the *Fungi Imperfecti* (*Blastomycetes*). The *Ascosporogenous* yeasts are divided into the families *Spermophthoraceae* and *Saccharomycetaceae*. The latter is comprised of four subfamilies, *Schizosaccharomycoideae* (for example, genus *Schizosaccharomyces*), *Nadsonioideae, Lipomycoideae* and *Saccharomycoideae* (for example, genera *Pichia, Kluyveromyces* and *Saccharomyces*). The *Basidiosporogenous* yeasts include the genera *Leucosporidim, Rhodosporidium, Sporidiobolus, Filobasidium* and *Filobasidiella*. Yeast belonging to the *Fungi Imperfecti* are divided into two families, *Sporobolomycetaceae* (for example, genera *Sorobolomyces* and *Bullera*) and *Cryptococcaceae* (for example, genus *Candida*). Since the classification of yeast may change in the future, for the purposes of this invention, yeast shall be defined as described in Biology and Activities of Yeast (Skinner *et al.*, *Soc. App. Bacteriol. Symposium Series* No. 9, (1980), the entirety of which is herein incorporated by reference). The biology of yeast and manipulation of yeast genetics are well known in the art (*see,* for example, *Biochemistry and Genetics of Yeast,* Bacil *et al.* (ed.), 2nd edition, 1987; *The Yeasts*, Rose and Harrison (eds.), 2nd ed., (1987); and *The Molecular Biology of the Yeast Saccharomyces*, Strathern *et al.* (eds.), (1981), all of which are herein incorporated by reference in their entirety).

"Fungi" as used herein includes the phyla *Ascomycota, Basidiomycota, Chytridiomycota* and *Zygomycota* (as defined by Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK; the entirety of

which is herein incorporated by reference) as well as the *Oomycota* (as cited in Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK) and all mitosporic fungi (Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK). Representative groups of *Ascomycota* include, for example, *Neurospora, Eupenicillium* (= *Penicillium*), *Emericella* (= *Aspergillus*), *Eurotiun* (= *Aspergillus*) and the true yeasts listed above. Examples of *Basidiomycota* include mushrooms, rusts and smuts. Representative groups of *Chytridiomycota* include, for example, *Allomyces, Blastocladiella, Coelomomyces* and aquatic fungi. Representative groups of *Oomycota* include, for example, *Saprolegniomycetous* aquatic fungi (water molds) such as *Achlya*. Examples of mitosporic fungi include *Aspergillus, Penicilliun, Candida* and *Alternaria*. Representative groups of *Zygomycota* include, for example, *Rhizopus* and *Mucor*.

"Filamentous fungi" include all filamentous forms of the subdivision *Eumycota* and *Oomycota* (as defined by Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK). The filamentous fungi are characterized by a vegetative mycelium composed of chitin, cellulose, glucan, chitosan, mannan and other complex polysaccharides. Vegetative growth is by hyphal elongation and carbon catabolism is obligately aerobic. In contrast, vegetative growth by yeasts such as *Saccharomyces cerevisiae* is by budding of a unicellular thallus and carbon catabolism may be fermentative.

In one embodiment, the fungal host cell is a yeast cell. In a preferred embodiment, the yeast host cell is a cell of the species of *Candida, Kluyveromyces, Saccharomyces, Schizosaccharomyces, Pichia* and *Yarrowia*. In a preferred embodiment, the yeast host cell is a

Saccharomyces cerevisiae cell, a *Saccharomyces carlsbergensis*, *Saccharomyces diastaticus* cell, a *Saccharomyces douglasii* cell, a *Saccharomyces kluyveri* cell, a *Saccharomyces norbensis* cell, or a *Saccharomyces oviformis* cell. In another preferred embodiment, the yeast host cell is a *Kluyveromyces lactis* cell. In another preferred embodiment, the yeast host cell is a *Yarrowia lipolytica* cell.

In another embodiment, the fungal host cell is a filamentous fungal cell. In a preferred embodiment, the filamentous fungal host cell is a cell of the species of, but not limited to, *Acremonium, Aspergillus, Fusarium, Humicola, Myceliophthora, Mucor, Neurospora, Penicillium, Thielavia, Tolypocladium* and *Trichoderma.* In a preferred embodiment, the filamentous fungal host cell is an *Aspergillus* cell. In another preferred embodiment, the filamentous fungal host cell is an *Acremonium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Fusarium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Humicola* cell. In another preferred embodiment, the filamentous fungal host cell is a *Myceliophthora* cell. In another even preferred embodiment, the filamentous fungal host cell is a *Mucor* cell. In another preferred embodiment, the filamentous fungal host cell is a *Neurospora* cell. In another preferred embodiment, the filamentous fungal host cell is a *Penicillium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Thielavia* cell. In another preferred embodiment, the filamentous fungal host cell is a *Tolypocladiun* cell. In another preferred embodiment, the filamentous fungal host cell is a *Trichoderma* cell. In a preferred embodiment, the filamentous fungal host cell is an *Aspergillus oryzae* cell, an *Aspergillus niger* cell, an *Aspergillus foetidus* cell, or an *Aspergillus japonicus* cell. In another preferred embodiment, the filamentous fungal host cell is a *Fusarium oxysporum* cell or a *Fusarium graminearum* cell. In another preferred embodiment, the filamentous fungal

host cell is a *Humicola insolens* cell or a *Humicola lanuginosus* cell. In another preferred embodiment, the filamentous fungal host cell is a *Myceliophthora thermophila* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Mucor miehei* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Neurospora crassa* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Penicillium purpurogenum* cell. In another most preferred embodiment, the filamentous fungal host cell is a *Thielavia terrestris* cell. In another most preferred embodiment, the *Trichoderma* cell is a *Trichoderma reesei* cell, a *Trichoderna viride* cell, a *Trichoderma longibrachiatum* cell, a *Trichoderma harzianum* cell, or a *Trichoderma koningii* cell. In a preferred embodiment, the fungal host cell is selected from an *A. nidulans* cell, an *A. niger* cell, an *A. oryzae* cell and an *A. sojae* cell. In a further preferred embodiment, the fungal host cell is an *A. nidulans* cell.

The recombinant fungal host cells of the present invention may further comprise one or more sequences which encode one or more factors that are advantageous in the expression of the protein or fragment thereof, for example, an activator (e.g., a trans-acting factor), a chaperone and a processing protease. The nucleic acids encoding one or more of these factors are preferably not operably linked to the nucleic acid encoding the protein or fragment thereof. An activator is a protein which activates transcription of a nucleic acid sequence encoding a polypeptide (Kudla *et al., EMBO* 9:1355-1364(1990); Jarai and Buxton, *Current Genetics* 26:2238-244(1994); Verdier, *Yeast* 6:271-297(1990), all of which are herein incorporated by reference in their entirety). The nucleic acid sequence encoding an activator may be obtained from the genes encoding *Saccharomyces cerevisiae* heme activator protein 1 (hap1), *Saccharomyces cerevisiae* galactose metabolizing protein 4 (gal4) and *Aspergillus nidulans* ammonia regulation protein (areA). For further examples, see Verdier, *Yeast* 6:271-297 (1990);

MacKenzie *et al.*, *Journal of Gen. Microbiol. 139*:2295-2307 (1993), both of which are herein incorporated by reference in their entirety). A chaperone is a protein which assists another protein in folding properly (Hartl *et al., TIBS 19*:20-25 (1994); Bergeron *et al., TIBS* 19:124-128 (1994); Demolder *et al., J. Biotechnology* 32:179-189 (1994); Craig, *Science 260*:1902-1903(1993); Gething and Sambrook, *Nature* 355:33-45 (1992); Puig and Gilbert, *J Biol. Chem. 269*:7764-7771 (1994); Wang and Tsou, *FASEB Journal* 7:1515-11157 (1993); Robinson *et al.*, *Bio/Technology 1*:381-384 (1994), all of which are herein incorporated by reference in their entirety). The nucleic acid sequence encoding a chaperone may be obtained from the genes encoding *Aspergillus oryzae* protein disulphide isomerase, *Saccharomyces cerevisiae* calnexin, *Saccharomyces cerevisiae* BiP/GRP78 and *Saccharomyces cerevisiae* Hsp70. For further examples, *see* Gething and Sambrook, *Nature 355*:33-45 (1992); Hartl *et al., TIBS 19*:20-25 (1994). A processing protease is a protease that cleaves a propeptide to generate a mature biochemically active polypeptide (Enderlin and Ogrydziak, *Yeast 10*:67-79 (1994); Fuller *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:1434-1438 (1989); Julius *et al., Cell 37*:1075-1089 (1984); Julius *et al.*, *Cell 32*:839-852 (1983), all of which are incorporated by reference in their entirety). The nucleic acid sequence encoding a processing protease may be obtained from the genes encoding *Aspergillus niger* Kex2, *Saccharomyces cerevisiae* dipeptidylaminopeptidase, *Saccharomyces cerevisiae* Kex2 and *Yarrowia lipolytica* dibasic processing endoprotease (xpr6). Any factor that is functional in the fungal host cell of choice may be used in the present invention.

Fungal cells may be transformed by a process involving protoplast formation, transformation of the protoplasts and regeneration of the cell wall in a manner known per se. Suitable procedures for transformation of *Aspergillus* host cells are described in EP 238 023 and

Yelton *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 81*:1470-1474 (1984), both of which are herein incorporated by reference in their entirety. A suitable method of transforming *Fusarium* species is described by Malardier *et al.*, *Gene 78:*147-156 (1989), the entirety of which is herein incorporated by reference. Yeast may be transformed using the procedures described by Becker and Guarente, In: Abelson and Simon, (eds.), *Guide to Yeast Genetics and Molecular Biology, Methods Enzymol.* Volume 194, pp 182-187, Academic Press, Inc., New York; Ito *et al.*, *J. Bacteriology 153*:163 (1983); Hinnen *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 75*:1920 (1978), all of which are herein incorporated by reference in their entirety.

The present invention also relates to methods of producing the protein or fragment thereof comprising culturing the recombinant fungal host cells under conditions conducive for expression of the protein or fragment thereof. The fungal cells of the present invention are cultivated in a nutrient medium suitable for production of the protein or fragment thereof using methods known in the art. For example, the cell may be cultivated by shake flask cultivation, small-scale or large-scale fermentation (including continuous, batch, fed-batch, or solid state fermentations) in laboratory or industrial fermentors performed in a suitable medium and under conditions allowing the protein or fragment thereof to be expressed and/or isolated. The cultivation takes place in a suitable nutrient medium comprising carbon and nitrogen sources and inorganic salts, using procedures known in the art (*see, e.g.*, Bennett and LaSure (eds.), *More Gene Manipulations in Fungi*, Academic Press, CA, (1991), the entirety of which is herein incorporated by reference). Suitable media are available from commercial suppliers or may be prepared according to published compositions (*e.g.*, in catalogues of the American Type Culture Collection, Manassas, VA). If the protein or fragment thereof is secreted into the nutrient

medium, a protein or fragment thereof can be recovered directly from the medium. If the protein or fragment thereof is not secreted, it is recovered from cell lysates.

The expressed protein or fragment thereof may be detected using methods known in the art that are specific for the particular protein or fragment. These detection methods may include the use of specific antibodies, formation of an enzyme product, or disappearance of an enzyme substrate. For example, if the protein or fragment thereof has enzymatic activity, an enzyme assay may be used. Alternatively, if polyclonal or monoclonal antibodies specific to the protein or fragment thereof are available, immunoassays may be employed using the antibodies to the protein or fragment thereof. The techniques of enzyme assay and immunoassay are well known to those skilled in the art.

The resulting protein or fragment thereof may be recovered by methods known in the arts. For example, the protein or fragment thereof may be recovered from the nutrient medium by conventional procedures including, but not limited to, centrifugation, filtration, extraction, spray-drying, evaporation, or precipitation. The recovered protein or fragment thereof may then be further purified by a variety of chromatographic procedures, e.g., ion exchange chromatography, gel filtration chromatography, affinity chromatography, or the like.

(c) Mammalian Constructs and Transformed Mammalian Cells

The present invention also relates to methods for obtaining a recombinant mammalian host cell, comprising introducing into a mammalian host cell exogenous genetic material. The present invention also relates to a mammalian cell comprising a mammalian recombinant vector. The present invention also relates to methods for obtaining a recombinant mammalian host cell, comprising introducing into a mammalian cell exogenous genetic material.

Mammalian cell lines available as hosts for expression are known in the art and include many immortalized cell lines available from the American Type Culture Collection (ATCC, Manassas, VA), such as HeLa cells, Chinese hamster ovary (CHO) cells, baby hamster kidney (BHK) cells and a number of other cell lines. Suitable promoters for mammalian cells are also known in the art and include viral promoters such as that from Simian Virus 40 (SV40) (Fiers *et al.*, *Nature* 273:113 (1978), the entirety of which is herein incorporated by reference), Rous sarcoma virus (RSV), adenovirus (ADV) and bovine papilloma virus (BPV). Mammalian cells may also require terminator sequences and poly-A addition sequences. Enhancer sequences which increase expression may also be included and sequences which promote amplification of the gene may also be desirable (for example methotrexate resistance genes).

Vectors suitable for replication in mammalian cells may include viral replicons, or sequences which insure integration of the appropriate sequences encoding HCV epitopes into the host genome. For example, another vector used to express foreign DNA is vaccinia virus. In this case, for example, a nucleic acid molecule encoding a protein or fragment thereof is inserted into the vaccinia genome. Techniques for the insertion of foreign DNA into the vaccinia virus genome are known in the art and may utilize, for example, homologous recombination. Such heterologous DNA is generally inserted into a gene which is non-essential to the virus, for example, the thymidine kinase gene (tk), which also provides a selectable marker. Plasmid vectors that greatly facilitate the construction of recombinant viruses have been described (*see*, for example, Mackett *et al*, *J Virol.* *49*:857 (1984); Chakrabarti *et al.*, *Mol. Cell. Biol.* *5*:3403 (1985); Moss, In: *Gene Transfer Vectors For Mammalian Cells* (Miller and Calos, eds., Cold Spring Harbor Laboratory, N.Y., p. 10, (1987); all of which are herein incorporated by reference

in their entirety). Expression of the HCV polypeptide then occurs in cells or animals which are infected with the live recombinant vaccinia virus.

The sequence to be integrated into the mammalian sequence may be introduced into the primary host by any convenient means, which includes calcium precipitated DNA, spheroplast fusion, transformation, electroporation, biolistics, lipofection, microinjection, or other convenient means. Where an amplifiable gene is being employed, the amplifiable gene may serve as the selection marker for selecting hosts into which the amplifiable gene has been introduced. Alternatively, one may include with the amplifiable gene another marker, such as a drug resistance marker, e.g. neomycin resistance (G418 in mammalian cells), hygromycin in resistance etc., or an auxotrophy marker (HIS3, TRP1, LEU2, URA3, ADE2, LYS2, etc.) for use in yeast cells.

Depending upon the nature of the modification and associated targeting construct, various techniques may be employed for identifying targeted integration. Conveniently, the DNA may be digested with one or more restriction enzymes and the fragments probed with an appropriate DNA fragment which will identify the properly sized restriction fragment associated with integration.

One may use different promoter sequences, enhancer sequences, or other sequence which will allow for enhanced levels of expression in the expression host. Thus, one may combine an enhancer from one source, a promoter region from another source, a 5'- noncoding region upstream from the initiation methionine from the same or different source as the other sequences and the like. One may provide for an intron in the non-coding region with appropriate splice sites or for an alternative 3'- untranslated sequence or polyadenylation site. Depending upon the particular purpose of the modification, any of these sequences may be introduced, as desired.

Where selection is intended, the sequence to be integrated will have with it a marker gene, which allows for selection. The marker gene may conveniently be downstream from the target gene and may include resistance to a cytotoxic agent, e.g. antibiotics, heavy metals, or the like, resistance or susceptibility to HAT, gancyclovir, etc., complementation to an auxotrophic host, particularly by using an auxotrophic yeast as the host for the subject manipulations, or the like. The marker gene may also be on a separate DNA molecule, particularly with primary mammalian cells. Alternatively, one may screen the various transformants, due to the high efficiency of recombination in yeast, by using hybridization analysis, PCR, sequencing, or the like.

For homologous recombination, constructs can be prepared where the amplifiable gene will be flanked, normally on both sides with DNA homologous with the DNA of the target region. Depending upon the nature of the integrating DNA and the purpose of the integration, the homologous DNA will generally be within 100kb, usually 50kb, preferably about 25kb, of the transcribed region of the target gene, more preferably within 2kb of the target gene. Where modeling of the gene is intended, homology will usually be present proximal to the site of the mutation. The homologous DNA may include the 5'-upstream region outside of the transcriptional regulatory region or comprising any enhancer sequences, transcriptional initiation sequences, adjacent sequences, or the like. The homologous region may include a portion of the coding region, where the coding region may be comprised only of an open reading frame or combination of exons and introns. The homologous region may comprise all or a portion of an intron, where all or a portion of one or more exons may also be present. Alternatively, the homologous region may comprise the 3'-region, so as to comprise all or a portion of the transcriptional termination region, or the region 3' of this region. The homologous regions may

extend over all or a portion of the target gene or be outside the target gene comprising all or a portion of the transcriptional regulatory regions and/or the structural gene.

The integrating constructs may be prepared in accordance with conventional ways, where sequences may be synthesized, isolated from natural sources, manipulated, cloned, ligated, subjected to in vitro mutagenesis, primer repair, or the like. At various stages, the joined sequences may be cloned and analyzed by restriction analysis, sequencing, or the like. Usually during the preparation of a construct where various fragments are joined, the fragments, intermediate constructs and constructs will be carried on a cloning vector comprising a replication system functional in a prokaryotic host, e.g., *E. coli* and a marker for selection, e.g., biocide resistance, complementation to an auxotrophic host, etc. Other functional sequences may also be present, such as polylinkers, for ease of introduction and excision of the construct or portions thereof, or the like. A large number of cloning vectors are available such as pBR322, the pUC series, etc. These constructs may then be used for integration into the primary mammalian host.

In the case of the primary mammalian host, a replicating vector may be used. Usually, such vector will have a viral replication system, such as SV40, bovine papilloma virus, adenovirus, or the like. The linear DNA sequence vector may also have a selectable marker for identifying transfected cells. Selectable markers include the neo gene, allowing for selection with G418, the herpes tk gene for selection with HAT medium, the gpt gene with mycophenolic acid, complementation of an auxotrophic host, etc.

The vector may or may not be capable of stable maintenance in the host. Where the vector is capable of stable maintenance, the cells will be screened for homologous integration of the vector into the genome of the host, where various techniques for curing the cells may be

employed. Where the vector is not capable of stable maintenance, for example, where a temperature sensitive replication system is employed, one may change the temperature from the permissive temperature to the non-permissive temperature, so that the cells may be cured of the vector. In this case, only those cells having integration of the construct comprising the amplifiable gene and, when present, the selectable marker, will be able to survive selection.

Where a selectable marker is present, one may select for the presence of the targeting construct by means of the selectable marker. Where the selectable marker is not present, one may select for the presence of the construct by the amplifiable gene. For the neo gene or the herpes tk gene, one could employ a medium for growth of the transformants of about 0.1-1 mg/ml of G418 or may use HAT medium, respectively. Where DHFR is the amplifiable gene, the selective medium may include from about 0.01-0.5 μM of methotrexate or be deficient in glycine-hypoxanthine-thymidine and have dialysed serum (GHT media).

The DNA can be introduced into the expression host by a variety of techniques that include calcium phosphate/DNA co-precipitates, microinjection of DNA into the nucleus, electroporation, yeast protoplast fusion with intact cells, transfection, polycations, e.g., polybrene, polyornithine, etc., or the like. The DNA may be single or double stranded DNA, linear or circular. The various techniques for transforming mammalian cells are well known (see Keown *et al., Methods Enzymol.* (1989); Keown *et al., Methods Enzymol. 185*:527-537 (1990); Mansour *et al., Nature 336*:348-352, (1988); all of which are herein incorporated by reference in their entirety).

(d) Insect Constructs and Transformed Insect Cells

The present invention also relates to an insect recombinant vectors comprising exogenous genetic material. The present invention also relates to an insect cell comprising an insect

recombinant vector. The present invention also relates to methods for obtaining a recombinant insect host cell, comprising introducing into an insect cell exogenous genetic material.

The insect recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures and can bring about the expression of the nucleic acid sequence. The choice of a vector will typically depend on the compatibility of the vector with the insect host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the insect host. In addition, the insect vector may be an expression vector. Nucleic acid molecules can be suitably inserted into a replication vector for expression in the insect cell under a suitable promoter for insect cells. Many vectors are available for this purpose and selection of the appropriate vector will depend mainly on the size of the nucleic acid molecule to be inserted into the vector and the particular host cell to be transformed with the vector. Each vector contains various components depending on its function (amplification of DNA or expression of DNA) and the particular host cell with which it is compatible. The vector components for insect cell transformation generally include, but are not limited to, one or more of the following: a signal sequence, origin of replication, one or more marker genes and an inducible promoter.

The insect vector may be an autonomously replicating vector, *i.e.,* a vector which exists as an extrachromosomal entity, the replication of which is independent of chromosomal replication, *e.g.,* a plasmid, an extrachromosomal element, a minichromosome, or an artificial chromosome. The vector may contain any means for assuring self-replication. Alternatively, the vector may be one which, when introduced into the insect cell, is integrated into the genome and replicated together with the chromosome(s) into which it has been integrated. For integration,

the vector may rely on the nucleic acid sequence of the vector for stable integration of the vector into the genome by homologous or nonhomologous recombination. Alternatively, the vector may contain additional nucleic acid sequences for directing integration by homologous recombination into the genome of the insect host. The additional nucleic acid sequences enable the vector to be integrated into the host cell genome at a precise location(s) in the chromosome(s). To increase the likelihood of integration at a precise location, there should be preferably two nucleic acid sequences which individually contain a sufficient number of nucleic acids, preferably 400bp to 1500bp, more preferably 800bp to 1000bp, which are highly homologous with the corresponding target sequence to enhance the probability of homologous recombination. These nucleic acid sequences may be any sequence that is homologous with a target sequence in the genome of the insect host cell and, furthermore, may be non-encoding or encoding sequences.

Baculovirus expression vectors (BEVs) have become important tools for the expression of foreign genes, both for basic research and for the production of proteins with direct clinical applications in human and veterinary medicine (Doerfler, *Curr. Top. Microbiol. Immunol. 131*:51-68 (1968); Luckow and Summers, *Bio/Technology 6*:47-55 (1988a); Miller, *Annual Review of Microbiol. 42*:177-199 (1988); Summers, *Curr. Comm. Molecular Biology*, Cold Spring Harbor Press, Cold Spring Harbor, N.Y. (1988); all of which are herein incorporated by reference in their entirety). BEVs are recombinant insect viruses in which the coding sequence for a chosen foreign gene has been inserted behind a baculovirus promoter in place of the viral gene, e.g., polyhedrin (Smith and Summers, U.S. Pat. No., 4,745,051, the entirety of which is incorporated herein by reference).

The use of baculovirus vectors relies upon the host cells being derived from *Lepidopteran* insects such as *Spodoptera frugiperda* or *Trichoplusia ni*. The preferred *Spodoptera frugiperda* cell line is the cell line Sf9. The *Spodoptera frugiperda* Sf9 cell line was obtained from American Type Culture Collection (Manassas, VA.) and is assigned accession number ATCC CRL 1711 (Summers and Smith, *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures,* Texas Ag. Exper. Station Bulletin No. 1555 (1988), the entirety of which is herein incorporated by reference). Other insect cell systems, such as the silkworm *B. mori* may also be used.

The proteins expressed by the BEVs are, therefore, synthesized, modified and transported in host cells derived from *Lepidopteran* insects. Most of the genes that have been inserted and produced in the baculovirus expression vector system have been derived from vertebrate species. Other baculovirus genes in addition to the polyhedrin promoter may be employed to advantage in a baculovirus expression system. These include immediate-early (alpha), delayed-early (β), late (γ), or very late (delta), according to the phase of the viral infection during which they are expressed. The expression of these genes occurs sequentially, probably as the result of a "cascade" mechanism of transcriptional regulation. (Guarino and Summers, *J. Virol. 57*:563-571 (1986); Guarino and Summers, *J. Virol. 61*:2091-2099 (1987); Guarino and Summers, *Virol. 162*:444-451 (1988); all of which are herein incorporated by reference in their entirety).

Insect recombinant vectors are useful as intermediates for the infection or transformation of insect cell systems. For example, an insect recombinant vector containing a nucleic acid molecule encoding a baculovirus transcriptional promoter followed downstream by an insect signal DNA sequence is capable of directing the secretion of the desired biologically active protein from the insect cell. The vector may utilize a baculovirus transcriptional promoter region

derived from any of the over 500 baculoviruses generally infecting insects, such as for example the Orders *Lepidoptera, Diptera, Orthoptera, Coleoptera and Hymenoptera*, including for example but not limited to the viral DNAs of *Autographa californica MNPV, Bombyx mori NPV, Trichoplusia ni MNPV, Rachiplusia ou MNPV or Galleria mellonella MNPV*, wherein said baculovirus transcriptional promoter is a baculovirus immediate-early gene IEl or IEN promoter; an immediate-early gene in combination with a baculovirus delayed-early gene promoter region selected from the group consisting of 39K and a *HindIII-k* fragment delayed-early gene; or a baculovirus late gene promoter. The immediate-early or delayed-early promoters can be enhanced with transcriptional enhancer elements. The insect signal DNA sequence may code for a signal peptide of a *Lepidopteran* adipokinetic hormone precursor or a signal peptide of the *Manduca sexta* adipokinetic hormone precursor (Summers, U.S. Patent No. 5,155,037; the entirety of which is herein incorporated by reference). Other insect signal DNA sequences include a signal peptide of the *Orthoptera Schistocerca gregaria* locust adipokinetic hormone precurser and the *Drosophila melanogaster* cuticle genes CP1, CP2, CP3 or CP4 or for an insect signal peptide having substantially a similar chemical composition and function (Summers, U.S. Patent No. 5,155,037).

Insect cells are distinctly different from animal cells. Insects have a unique life cycle and have distinct cellular properties such as the lack of intracellular plasminogen activators in which are present in vertebrate cells. Another difference is the high expression levels of protein products ranging from 1 to greater than 500 mg/liter and the ease at which cDNA can be cloned into cells (Frasier, *In Vitro Cell. Dev. Biol. 25*:225 (1989); Summers and Smith, In: *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures,* Texas Ag. Exper. Station Bulletin No. 1555 (1988), both of which are incorporated by reference in their entirety).

Recombinant protein expression in insect cells is achieved by viral infection or stable transformation. For viral infection, the desired gene is cloned into baculovirus at the site of the wild-type polyhedron gene (Webb and Summers, *Technique 2*:173 (1990); Bishop and Posse, *Adv. Gene Technol. 1*:55 (1990); both of which are incorporated by reference in their entirety). The polyhedron gene is a component of a protein coat in occlusions which encapsulate virus particles. Deletion or insertion in the polyhedron gene results the failure to form occlusion bodies. Occlusion negative viruses are morphologically different from occlusion positive viruses and enable one skilled in the art to identify and purify recombinant viruses.

The vectors of present invention preferably contain one or more selectable markers which permit easy selection of transformed cells. A selectable marker is a gene the product of which provides, for example biocide or viral resistance, resistance to heavy metals, prototrophy to auxotrophs and the like. Selection may be accomplished by co-transformation, *e.g.*, as described in WO 91/17243, a nucleic acid sequence of the present invention may be operably linked to a suitable promoter sequence. The promoter sequence is a nucleic acid sequence which is recognized by the insect host cell for expression of the nucleic acid sequence. The promoter sequence contains transcription and translation control sequences which mediate the expression of the protein or fragment thereof. The promoter may be any nucleic acid sequence which shows transcriptional activity in the insect host cell of choice and may be obtained from genes encoding polypeptides either homologous or heterologous to the host cell.

For example, a nucleic acid molecule encoding a protein or fragment thereof may also be operably linked to a suitable leader sequence. A leader sequence is a nontranslated region of a mRNA which is important for translation by the fungal host. The leader sequence is operably linked to the 5' terminus of the nucleic acid sequence encoding the protein or fragment thereof.

The leader sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any leader sequence which is functional in the insect host cell of choice may be used in the present invention.

A polyadenylation sequence may also be operably linked to the 3' terminus of the nucleic acid sequence of the present invention. The polyadenylation sequence is a sequence which when transcribed is recognized by the insect host to add polyadenosine residues to transcribed mRNA. The polyadenylation sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any polyadenylation sequence which is functional in the fungal host of choice may be used in the present invention.

To avoid the necessity of disrupting the cell to obtain the protein or fragment thereof and to minimize the amount of possible degradation of the expressed polypeptide within the cell, it is preferred that expression of the polypeptide gene gives rise to a product secreted outside the cell. To this end, the protein or fragment thereof of the present invention may be linked to a signal peptide linked to the amino terminus of the protein or fragment thereof. A signal peptide is an amino acid sequence which permits the secretion of the protein or fragment thereof from the insect host into the culture medium. The signal peptide may be native to the protein or fragment thereof of the invention or may be obtained from foreign sources. The 5' end of the coding sequence of the nucleic acid sequence of the present invention may inherently contain a signal peptide coding region naturally linked in translation reading frame with the segment of the coding region which encodes the secreted protein or fragment thereof.

At present, a mode of achieving secretion of a foreign gene product in insect cells is by way of the foreign gene's native signal peptide. Because the foreign genes are usually from non-insect organisms, their signal sequences may be poorly recognized by insect cells and hence,

levels of expression may be suboptimal. However, the efficiency of expression of foreign gene products seems to depend primarily on the characteristics of the foreign protein. On average, nuclear localized or non-structural proteins are most highly expressed, secreted proteins are intermediate and integral membrane proteins are the least expressed. One factor generally affecting the efficiency of the production of foreign gene products in a heterologous host system is the presence of native signal sequences (also termed presequences, targeting signals, or leader sequences) associated with the foreign gene. The signal sequence is generally coded by a DNA sequence immediately following (5' to 3') the translation start site of the desired foreign gene.

The expression dependence on the type of signal sequence associated with a gene product can be represented by the following example: If a foreign gene is inserted at a site downstream from the translational start site of the baculovirus polyhedrin gene so as to produce a fusion protein (containing the N-terminus of the polyhedrin structural gene), the fused gene is highly expressed. But less expression is achieved when a foreign gene is inserted in a baculovirus expression vector immediately following the transcriptional start site and totally replacing the polyhedrin structural gene.

Insertions into the region -50 to -1 significantly alter (reduce) steady state transcription which, in turn, reduces translation of the foreign gene product. Use of the pVL941 vector optimizes transcription of foreign genes to the level of the polyhedrin gene transcription. Even though the transcription of a foreign gene may be optimal, optimal translation may vary because of several factors involving processing: signal peptide recognition, mRNA and ribosome binding, glycosylation, disulfide bond formation, sugar processing, oligomerization, for example.

The properties of the insect signal peptide are expected to be more optimal for the efficiency of the translation process in insect cells than those from vertebrate proteins. This

phenomenon can generally be explained by the fact that proteins secreted from cells are synthesized as precursor molecules containing hydrophobic N-terminal signal peptides. The signal peptides direct transport of the select protein to its target membrane and are then cleaved by a peptidase on the membrane, such as the endoplasmic reticulum, when the protein passes through it.

Another exemplary insect signal sequence is the sequence encoding for Drosophila cuticle proteins such as CP1, CP2, CP3 or CP4 (Summers, U.S. Patent No. 5,278,050; the entirety of which is herein incorporated by reference). Most of a 9kb region of the Drosophila genome containing genes for the cuticle proteins has been sequenced. Four of the five cuticle genes contains a signal peptide coding sequence interrupted by a short intervening sequence (about 60 base pairs) at a conserved site. Conserved sequences occur in the 5' mRNA untranslated region, in the adjacent 35 base pairs of upstream flanking sequence and at -200 base pairs from the mRNA start position in each of the cuticle genes.

Standard methods of insect cell culture, cotransfection and preparation of plasmids are set forth in Summers and Smith (Summers and Smith, *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures*, Texas Agricultural Experiment Station Bulletin No. 1555, Texas A&M University (1987)). Procedures for the cultivation of viruses and cells are described in Volkman and Summers, *J. Virol 19*:820-832 (1975) and Volkman *et al.*, *J. Virol 19*:820-832 (1976); both of which are herein incorporated by reference in their entirety.

(e) Bacterial Constructs and Transformed Bacterial Cells

The present invention also relates to a bacterial recombinant vector comprising exogenous genetic material. The present invention also relates to a bacteria cell comprising a bacterial recombinant vector. The present invention also relates to methods for obtaining a

recombinant bacteria host cell, comprising introducing into a bacterial host cell exogenous genetic material.

The bacterial recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures. The choice of a vector will typically depend on the compatibility of the vector with the bacterial host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the bacterial host. In addition, the bacterial vector may be an expression vector. Nucleic acid molecules encoding protein homologues or fragments thereof can, for example, be suitably inserted into a replicable vector for expression in the bacterium under the control of a suitable promoter for bacteria. Many vectors are available for this purpose and selection of the appropriate vector will depend mainly on the size of the nucleic acid to be inserted into the vector and the particular host cell to be transformed with the vector. Each vector contains various components depending on its function (amplification of DNA or expression of DNA) and the particular host cell with which it is compatible. The vector components for bacterial transformation generally include, but are not limited to, one or more of the following: a signal sequence, an origin of replication, one or more marker genes and an inducible promoter.

In general, plasmid vectors containing replicon and control sequences that are derived from species compatible with the host cell are used in connection with bacterial hosts. The vector ordinarily carries a replication site, as well as marking sequences that are capable of providing phenotypic selection in transformed cells. For example, *E. coli* is typically transformed using pBR322, a plasmid derived from an *E. coli* species (see, e.g., Bolivar *et al.*,

Gene 2:95 (1977); the entirety of which is herein incorporated by reference). pBR322 contains genes for ampicillin and tetracycline resistance and thus provides easy means for identifying transformed cells. The pBR322 plasmid, or other microbial plasmid or phage, also generally contains, or is modified to contain, promoters that can be used by the microbial organism for expression of the selectable marker genes.

Nucleic acid molecules encoding protein or fragments thereof may be expressed not only directly, but also as a fusion with another polypeptide, preferably a signal sequence or other polypeptide having a specific cleavage site at the N-terminus of the mature polypeptide. In general, the signal sequence may be a component of the vector, or it may be a part of the polypeptide DNA that is inserted into the vector. The heterologous signal sequence selected should be one that is recognized and processed (i.e., cleaved by a signal peptidase) by the host cell. For bacterial host cells that do not recognize and process the native polypeptide signal sequence, the signal sequence is substituted by a bacterial signal sequence selected, for example, from the group consisting of the alkaline phosphatase, penicillinase, lpp, or heat-stable enterotoxin II leaders.

Both expression and cloning vectors contain a nucleic acid sequence that enables the vector to replicate in one or more selected host cells. Generally, in cloning vectors this sequence is one that enables the vector to replicate independently of the host chromosomal DNA and includes origins of replication or autonomously replicating sequences. Such sequences are well known for a variety of bacteria. The origin of replication from the plasmid pBR322 is suitable for most Gram-negative bacteria.

Expression and cloning vectors also generally contain a selection gene, also termed a selectable marker. This gene encodes a protein necessary for the survival or growth of

transformed host cells grown in a selective culture medium. Host cells not transformed with the vector containing the selection gene will not survive in the culture medium. Typical selection genes encode proteins that (a) confer resistance to antibiotics or other toxins, e.g., ampicillin, neomycin, methotrexate, or tetracycline, (b) complement auxotrophic deficiencies, or (c) supply critical nutrients not available from complex media, e.g., the gene encoding D-alanine racemase for *Bacilli*. One example of a selection scheme utilizes a drug to arrest growth of a host cell. Those cells that are successfully transformed with a heterologous protein homologue or fragment thereof produce a protein conferring drug resistance and thus survive the selection regimen.

The expression vector for producing a protein or fragment thereof can also contains an inducible promoter that is recognized by the host bacterial organism and is operably linked to the nucleic acid encoding, for example, the nucleic acid molecule encoding the protein homologue or fragment thereof of interest. Inducible promoters suitable for use with bacterial hosts include the β-lactamase and lactose promoter systems (Chang *et al.*, *Nature 275*:615 (1978); Goeddel *et al.*, *Nature 281*:544 (1979); both of which are herein incorporated by reference in their entirety), the arabinose promoter system (Guzman *et al., J. Bacteriol. 174*:7716-7728 (1992); the entirety of which is herein incorporated by reference), alkaline phosphatase, a tryptophan (trp) promoter system (Goeddel, *Nucleic Acids Res. 8*:4057 (1980); EP 36,776; both of which are herein incorporated by reference in their entirety) and hybrid promoters such as the tac promoter (deBoer *et al.*, *Proc. Natl. Acad. Sci. (USA) 80*:21-25 (1983); the entirety of which is herein incorporated by reference). However, other known bacterial inducible promoters are suitable (Siebenlist *et al.*, *Cell 20*:269 (1980); the entirety of which is herein incorporated by reference).

Promoters for use in bacterial systems also generally contain a Shine-Dalgarno (S.D.) sequence operably linked to the DNA encoding the polypeptide of interest. The promoter can be

removed from the bacterial source DNA by restriction enzyme digestion and inserted into the vector containing the desired DNA.

Construction of suitable vectors containing one or more of the above-listed components employs standard ligation techniques. Isolated plasmids or DNA fragments are cleaved, tailored and re-ligated in the form desired to generate the plasmids required. Examples of available bacterial expression vectors include, but are not limited to, the multifunctional *E. coli* cloning and expression vectors such as Bluescript™ (Stratagene, La Jolla, CA), in which, for example, encoding an *A. nidulans* protein homologue or fragment thereof homologue, may be ligated into the vector in frame with sequences for the amino-terminal Met and the subsequent 7 residues of β-galactosidase so that a hybrid protein is produced; pIN vectors (Van Heeke and Schuster, *J. Biol. Chem. 264*:5503-5509 (1989), the entirety of which is herein incorporated by reference); and the like. pGEX vectors (Promega, Madison Wisconsin U.S.A.) may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to glutathione-agarose beads followed by elution in the presence of free glutathione. Proteins made in such systems are designed to include heparin, thrombin or factor XA protease cleavage sites so that the cloned polypeptide of interest can be released from the GST moiety at will.

Suitable host bacteria for a bacterial vector include archaebacteria and eubacteria, especially eubacteria and most preferably *Enterobacteriaceae*. Examples of useful bacteria include *Escherichia, Enterobacter, Azotobacter, Erwinia, Bacillus, Pseudomonas, Klebsiella, Proteus, Salmonella, Serratia, Shigella, Rhizobia, Vitreoscilla and Paracoccus*. Suitable *E. coli* hosts include *E. coli* W3110 (American Type Culture Collection (ATCC) 27,325, Manassas,

Virginia U.S.A.), *E. coli* 294 (ATCC 31,446), *E. coli B* and *E. coli* X1776 (ATCC 31,537). These examples are illustrative rather than limiting. Mutant cells of any of the above-mentioned bacteria may also be employed. It is, of course, necessary to select the appropriate bacteria taking into consideration replicability of the replicon in the cells of a bacterium. For example, *E. coli, Serratia*, or *Salmonella* species can be suitably used as the host when well known plasmids such as pBR322, pBR325, pACYC177, or pKN410 are used to supply the replicon. *E. coli* strain W3110 is a preferred host or parent host because it is a common host strain for recombinant DNA product fermentations. Preferably, the host cell should secrete minimal amounts of proteolytic enzymes.

Host cells are transfected and preferably transformed with the above-described vectors and cultured in conventional nutrient media modified as appropriate for inducing promoters, selecting transformants, or amplifying the genes encoding the desired sequences.

Numerous methods of transfection are known to the ordinarily skilled artisan, for example, calcium phosphate and electroporation. Depending on the host cell used, transformation is done using standard techniques appropriate to such cells. The calcium treatment employing calcium chloride, as described in section 1.82 of Sambrook *et al.*, *Molecular Cloning*: *A Laboratory Manual*, New York: Cold Spring Harbor Laboratory Press, (1989), is generally used for bacterial cells that contain substantial cell-wall barriers. Another method for transformation employs polyethylene glycol/DMSO, as described in Chung and Miller (Chung and Miller, *Nucleic Acids Res. 16*:3580 (1988); the entirety of which is herein incorporated by reference). Yet another method is the use of the technique termed electroporation.

Bacterial cells used to produce the polypeptide of interest for purposes of this invention are cultured in suitable media in which the promoters for the nucleic acid encoding the heterologous polypeptide can be artificially induced as described generally, e.g., in Sambrook *et al., Molecular Cloning: A Laboratory Manual*, New York: Cold Spring Harbor Laboratory Press, (1989). Examples of suitable media are given in U.S. Pat. Nos. 5,304,472 and 5,342,763; both of which are incorporated by reference in their entirety.

In addition to the above discussed procedures, practitioners are familiar with the standard resource materials which describe specific conditions and procedures for the construction, manipulation and isolation of macromolecules (e.g., DNA molecules, plasmids, etc.), generation of recombinant organisms and the screening and isolating of clones, (see for example, Sambrook *et al., Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press (1989); Mailga *et al., Methods in Plant Molecular Biology,* Cold Spring Harbor Press (1995), the entirety of which is herein incorporated by reference; Birren *et al., Genome Analysis: Analyzing DNA,* 1, Cold Spring Harbor, New York, the entirety of which is herein incorporated by reference).

(f) Computer Readable Media

The nucleotide sequence provided in SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof, or complement thereof, or a nucleotide sequence at least 90% identical, preferably 95%, identical even more preferably 99% or 100% identical to the sequence provided in SEQ ID NO: 1 through SEQ ID NO: 3204 or fragment thereof, or complement thereof, can be "provided" in a variety of mediums to facilitate use. Such a medium can also provide a subset thereof in a form that allows a skilled artisan to examine the sequences.

A preferred subset of nucleotide sequences are those nucleic acid sequences that encode a maize or soybean methionine adenosyltransferase enzyme or complement thereof or fragment of

either, a nucleic acid molecule that encodes a maize or soybean S-adenosylmethionine decarboxylase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean aspartate kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean cystathionine β-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cytsathionine γ-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either.

A further preferred subset of nucleic acid sequences is where the subset of sequences is two proteins or fragments thereof, more preferably three proteins or fragments thereof and even more preferable four proteins or fragments thereof, these nucleic acid sequences are selected from the group that comprises a maize or soybean methionine adenosyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean S-adenosylmethionine decarboxylase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean aspartate kinase enzyme or

complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean aspartate-semialdehyde dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean *O*-succinylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean cystathionine β-lyase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or soybean 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean adenosylhomocysteinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cystathionine β-synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean cytsathionine γ-lyase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean *O*-acetylhomoserine (thiol)-lyase enzyme or complement thereof or fragment of either.

In one application of this embodiment, a nucleotide sequence of the present invention can be recorded on computer readable media. As used herein, "computer readable media" refers to any medium that can be read and accessed directly by a computer. Such media include, but are not limited to: magnetic storage media, such as floppy discs, hard disc, storage medium and magnetic tape: optical storage media such as CD-ROM; electrical storage media such as RAM and ROM; and hybrids of these categories such as magnetic/optical storage media. A skilled artisan can readily appreciate how any of the presently known computer readable mediums can be used to create a manufacture comprising computer readable medium having recorded thereon a nucleotide sequence of the present invention.

As used herein, "recorded" refers to a process for storing information on computer readable medium. A skilled artisan can readily adopt any of the presently known methods for recording information on computer readable medium to generate media comprising the nucleotide sequence information of the present invention. A variety of data storage structures are available to a skilled artisan for creating a computer readable medium having recorded thereon a nucleotide sequence of the present invention. The choice of the data storage structure will generally be based on the means chosen to access the stored information. In addition, a variety of data processor programs and formats can be used to store the nucleotide sequence information of the present invention on computer readable medium. The sequence information can be represented in a word processing text file, formatted in commercially-available software such as WordPerfect and Microsoft Word, or represented in the form of an ASCII file, stored in a database application, such as DB2, Sybase, Oracle, or the like. A skilled artisan can readily adapt any number of data processor structuring formats (e.g. text file or database) in order to obtain computer readable medium having recorded thereon the nucleotide sequence information of the present invention.

By providing one or more of nucleotide sequences of the present invention, a skilled artisan can routinely access the sequence information for a variety of purposes. Computer software is publicly available which allows a skilled artisan to access sequence information provided in a computer readable medium. The examples which follow demonstrate how software which implements the BLAST (Altschul *et al., J. Mol. Biol. 215:*403-410 (1990), the entirety of which is herein incorporated by reference) and BLAZE (Brutlag *et al., Comp. Chem. 17:*203-207 (1993), the entirety of which is herein incorporated by reference) search algorithms on a Sybase system can be used to identify open reading frames (ORFs) within the genome that

contain homology to ORFs or proteins from other organisms. Such ORFs are protein-encoding fragments within the sequences of the present invention and are useful in producing commercially important proteins such as enzymes used in amino acid biosynthesis, metabolism, transcription, translation, RNA processing, nucleic acid and a protein degradation, protein modification and DNA replication, restriction, modification, recombination and repair.

The present invention further provides systems, particularly computer-based systems, which contain the sequence information described herein. Such systems are designed to identify commercially important fragments of the nucleic acid molecule of the present invention. As used herein, "a computer-based system" refers to the hardware means, software means and data storage means used to analyze the nucleotide sequence information of the present invention. The minimum hardware means of the computer-based systems of the present invention comprises a central processing unit (CPU), input means, output means and data storage means. A skilled artisan can readily appreciate that any one of the currently available computer-based system are suitable for use in the present invention.

As indicated above, the computer-based systems of the present invention comprise a data storage means having stored therein a nucleotide sequence of the present invention and the necessary hardware means and software means for supporting and implementing a search means. As used herein, "data storage means" refers to memory that can store nucleotide sequence information of the present invention, or a memory access means which can access manufactures having recorded thereon the nucleotide sequence information of the present invention. As used herein, "search means" refers to one or more programs which are implemented on the computer-based system to compare a target sequence or target structural motif with the sequence information stored within the data storage means. Search means are used to identify fragments

or regions of the sequence of the present invention that match a particular target sequence or target motif. A variety of known algorithms are disclosed publicly and a variety of commercially available software for conducting search means are available can be used in the computer-based systems of the present invention. Examples of such software include, but are not limited to, MacPattern (EMBL), BLASTIN and BLASTIX (NCBIA). One of the available algorithms or implementing software packages for conducting homology searches can be adapted for use in the present computer-based systems.

The most preferred sequence length of a target sequence is from about 10 to 100 amino acids or from about 30 to 300 nucleotide residues. However, it is well recognized that during searches for commercially important fragments of the nucleic acid molecules of the present invention, such as sequence fragments involved in gene expression and protein processing, may be of shorter length.

As used herein, "a target structural motif," or "target motif," refers to any rationally selected sequence or combination of sequences in which the sequences the sequence(s) are chosen based on a three-dimensional configuration which is formed upon the folding of the target motif. There are a variety of target motifs known in the art. Protein target motifs include, but are not limited to, enzymatic active sites and signal sequences. Nucleic acid target motifs include, but are not limited to, promoter sequences, *cis* elements, hairpin structures and inducible expression elements (protein binding sequences).

Thus, the present invention further provides an input means for receiving a target sequence, a data storage means for storing the target sequences of the present invention sequence identified using a search means as described above and an output means for outputting the identified homologous sequences. A variety of structural formats for the input and output means

can be used to input and output information in the computer-based systems of the present invention. A preferred format for an output means ranks fragments of the sequence of the present invention by varying degrees of homology to the target sequence or target motif. Such presentation provides a skilled artisan with a ranking of sequences which contain various amounts of the target sequence or target motif and identifies the degree of homology contained in the identified fragment.

A variety of comparing means can be used to compare a target sequence or target motif with the data storage means to identify sequence fragments sequence of the present invention. For example, implementing software which implement the BLAST and BLAZE algorithms (Altschul *et al., J. Mol. Biol. 215:*403-410 (1990)) can be used to identify open frames within the nucleic acid molecules of the present invention. A skilled artisan can readily recognize that any one of the publicly available homology search programs can be used as the search means for the computer-based systems of the present invention.

Having now generally described the invention, the same will be more readily understood through reference to the following examples which are provided by way of illustration and are not intended to be limiting of the present invention, unless specified.

Example 1

The MONN01 cDNA library is a normalized library generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting

at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON001 cDNA library is generated from maize (B73, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) immature tassels at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V6 stage. At that stage the tassel is an immature tassel of about 2-3 cm in length. The tassels are removed and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON003 library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) roots at the V6 developmental stage. Seeds are planted at a depth of approximately 3 cm in coil into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth, the seedlings are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and approximately 3 times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting at a concentration of 150 ppm N. Two to three times during the life time of the plant from transplanting to flowering a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in approximately 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6 leaf development stage. The root system is cut from maize plant and washed with water to free it from the soil. The tissue is then immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON004 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is

approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON005 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) root tissue at the V6 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from the soil. The tissue is immediately frozen in liquid nitrogen and the harvested tissue is then stored at -80°C until RNA preparation.

The SATMON006 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) total leaf tissue at the V6 plant development

stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON007 cDNA library is generated from the primary root tissue of 5 day old maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). After germination, the trays, along with the moist paper, are moved to a greenhouse where the maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles for approximately 5 days. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. The primary root tissue is collected when the seedlings are 5 days old. At this stage, the primary root (radicle) is

pushed through the coleorhiza which itself is pushed through the seed coat. The primary root, which is about 2-3 cm long, is cut and immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON008 cDNA library is generated from the primary shoot (coleoptile 2-3 cm) of maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings which are approximately 5 days old. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). Then the trays containing the seeds are moved to a greenhouse at 15hr daytime/9 hr nighttime cycles and grown until they are 5 days post germination. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Tissue is collected when the seedlings are 5 days old. At this stage, the primary shoot (coleoptile) is pushed through the seed coat and is about 2-3 cm long. The coleoptile is dissected away from the rest of the seedling, immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON009 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaves at the 8 leaf stage (V8 plant development stage). Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is

70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 8-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical, are cut at the base of the leaves. The leaves are then pooled and then immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON010 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) root tissue at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the V8 development stage. The root system is cut from this mature maize plant and washed with water to free it from the soil. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON011 cDNA library is generated from undeveloped maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaf at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium.

After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The second youngest leaf which is at the base of the apical leaf of V6 stage maize plant is cut at the base and immediately transferred to liquid nitrogen containers in which the leaf is crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON012 cDNA library is generated from 2 day post germination maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). Then the trays containing the seeds are moved to the greenhouse and grown at 15hr daytime/9 hr nighttime cycles until 2 days post germination. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Tissue is collected when the seedlings are 2 days old. At the two day stage, the coleorhiza is pushed through the seed coat and the primary root (the radicle) is pierced the coleorhiza but is barely visible. Also, at this two day stage, the coleoptile is just emerging from the seed coat. The 2 days post germination seedlings are then immersed in liquid nitrogen and crushed. The harvested tissue is stored at -80°C until preparation of total RNA.

The SATMON013 cDNA library is generated from apical maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) meristem founder at the V4 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, the plant is at the 4 leaf stage. The lead at the apex of the V4 stage maize plant is referred to as the meristem founder. This apical meristem founder is cut, immediately frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON014 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) endosperm fourteen days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9

hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the maize plant ear shoots are ready for fertilization. At this stage, the ear shoots are enclosed in a paper bag before silk emergence to withhold the pollen. The ear shoots are pollinated and 14 days after pollination, the ears are pulled out and then the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the endosperms are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON016 library is a maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) sheath library collected at the V8 developmental stage. Seeds are planted in a depth of approximately 3 cm in solid into 2-3 inch pots containing Metro growing medium. After 2-3 weeks growth, they are transplanted into 10" pots containing the same. Plants are watered daily before transplantation and approximately the times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting, at a strength of 150 ppm N. Two to three times during the life time of the plant from transplanting to flowering, a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. When the maize plants are at the V8 stage the 5^{th} and 6^{th} leaves from the bottom exhibit fully developed leaf blades. At the base of these leaves, the ligule is differentiated and the leaf blade is joined to the sheath. The sheath is dissected away from the

base of the leaf then the sheath is frozen in liquid nitrogen and crushed. The tissue is then stored at -80°C until RNA preparation.

The SATMON017 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) embryo seventeen days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth the seeds are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergence to withhold the pollen. The ear shoots are fertilized and 21 days after pollination, the ears are pulled out and the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the embryos are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON019 (Lib3054) cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) culm (stem) at the V8 developmental stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing

medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. When the maize plant is at the V8 stage, the 5th and 6th leaves from the bottom have fully developed leaf blades. The region between the nodes of the 5th and the sixth leaves from the bottom is the region of the stem that is collected. The leaves are pulled out and the sheath is also torn away from the stem. This stem tissue is completely free of any leaf and sheath tissue. The stem tissue is then frozen in liquid nitrogen and stored at -80°C until RNA preparation.

The SATMON020 cDNA library is from a maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) Hill Type II-Initiated Callus. Petri plates containing approximately 25 ml of Type II initiation media are prepared. This medium contains N6 salts and vitamins, 3% sucrose, 2.3 g/liter proline 0.1 g/liter enzymatic casein hydrolysate, 2mg/liter 2,4 – dichloro phenoxy-acetic acid (2,4, D), 15.3 mg/liter $AgNO_3$ and 0.8% bacto agar and is adjusted to pH 6.0 before autoclaving. At 9-11 days after pollination, an ear with immature embryos measuring approximately 1-2 mm in length is chosen. The husks and silks are removed and then the ear is broken into halves and placed in an autoclaved solution of Clorox/TWEEN 20 sterilizing solution. Then the ear is rinsed with deionized water. Then each embryo is extracted from the kernel. Intact embryos are placed in contact with the medium, scutellar side up). Multiple embryos are plated on each plate and the plates are incubated in the dark at 25°C. Type II

calluses are friable, can be subcultured with a spatula, frequently regenerate via somatic embryogenesis and are relatively undifferentiated. As seen in the microscope, the Tape II calluses show color ranging from translucent to light yellow and heterogeneity on with respect to embryoid structure as well as stage of embryoid development. Once Type II callus are formed, the calluses is transferred to type II callus maintenance medium without $AgN0_3$. Every 7-10 days, the callus is subcultured. About 4 weeks after embryo isolation the callus is removed from the plates and then frozen in liquid nitrogen. The harvested tissue is stored at –80°C until RNA preparation.

The SATMON021 cDNA library is generated from the immature maize (DK604, Dekalb Genetics, Dekalb Illinois, U.S.A.) tassel at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. As the maize plant enters the V8 stage, tassels which are 15-20 cm in length are collected and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The SATMON022 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) ear (growing silks) at the V8 plant development stage. Seeds are planted

at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. *Zea mays* plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the plant is in the V8 stage. At this stage, some immature ear shoots are visible. The immature ear shoots (approximately 1 cm in length) are pulled out, frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON23 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) ear (growing silk) at the V8 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. When the tissue is harvested at the V8 stage, the length of the ear that is harvested is about 10-15 cm and the silks are just exposed (approximately 1 inch).

The ear along with the silks is frozen in liquid nitrogen and then the tissue is stored at -80°C until RNA preparation.

The SATMON024 cDNA library is generated from the immature maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) tassel at the V9 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. As a maize plant enters the V9 stage, the tassel is rapidly developing and a 37 cm tassel along with the glume, anthers and pollen is collected and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The SATMON025 cDNA library is from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) Hill Type II-Regenerated Callus. Type II callus is grown in initiation media as described for SATMON020 and then the embryoids on the surface of the Type II callus are allowed to mature and germinate. The 1-2 gm fresh weight of the soft friable type callus containing numerous embryoids are transferred to 100 x 15 mm petri plates containing 25 ml of regeneration media. Regeneration media consists of Murashige and Skoog (MS) basal salts, modified White's vitamins (0.2 g/liter glycine and 0.5 g/liter myo-inositoland 0.8% bacto agar (6SMS0D)). The plates are then placed in the dark after covering with parafilm. After 1 week,

the plates are moved to a lighted growth chamber with 16 hr light and 8 hr dark photoperiod. Three weeks after plating the Type II callus to 6SMS0D, the callus exhibit shoot formation. The callus and the shoots are transferred to fresh 6SMS0D plates for another 2 weeks. The callus and the shoots are then transferred to petri plates with reduced sucrose (3SMSOD). Upon distinct formation of a root and shoot, the newly developed green plants are then removed out with a spatula and frozen in liquid nitrogen containers. The harvested tissue is then stored at –80°C until RNA preparation.

The SATMON026 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) juvenile/adult shift leaves at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plants are at the 8-leaf development stage. Leaves are founded sequentially around the meristem over weeks of time and the older, more juvenile leaves arise earlier and in a more basal position than the younger, more adult leaves, which are in a more apical position. In a V8 plant, some leaves which are in the middle portion of the plant exhibit characteristics of both juvenile as well as adult leaves. They exhibit a yellowing color

but also exhibit, in part, a green color. These leaves are termed juvenile/adult shift leaves. The juvenile/adult shift leaves (the 4th, 5th leaves from the bottom) are cut at the base, pooled and transferred to liquid nitrogen in which they are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON027 cDNA library is generated from 6 day maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaves. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. *Zea mays* plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, when the plant is at the 8-leaf stage, water is held back for six days. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical, are all cut at the base of the leaves. All the leaves exhibit significant wilting. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON028 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) roots at the V8 developmental stage that are subject to six days water

stress. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, when the plant is at the 8-leaf stage, water is held back for six days. The root system is cut, shaken and washed to remove soil. Root tissue is then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON029 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings at the etiolated stage. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark for 4 days at approximately 70°F. Tissue is collected when the seedlings are 4 days old. By 4 days, the primary root has penetrated the coleorhiza and is about 4-5 cm and the secondary lateral roots have also made their appearance. The coleoptile has also pushed through the seed coat and is about 4-5 cm long. The seedlings are frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON030 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) root tissue at the V4 plant development stage. Seeds are planted at a

depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth, they are transplanted into 10 inch pots containing the same. Plants are watered daily before transplantation and approximately 3 times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting, at a strength of 150 ppm N. Two to three times during the life time of the plant, from transplanting to flowering, a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 sodium vapor lamps. Tissue is collected when the maize plant is at the 4 leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from the soil. The tissue is then immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON031 cDNA library is generated from the maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaf tissue at the V4 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected

when the maize plant is at the 4-leaf development stage. The third leaf from the bottom is cut at the base and immediately frozen in liquid nitrogen and crushed. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON033 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) embryo tissue 13 days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of the maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergent to withhold the pollen. The ear shoots are pollinated and 13 days after pollination, the ears are pulled out and then the kernels are plucked cut of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the embryos are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON034 cDNA library is generated from cold stressed maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept on at 10°C for 7 days. After 7 days, the temperature is shifted to 15°C

for one day until germination of the seed. Tissue is collected once the seedlings are 1 day old. At this point, the coleorhiza has just pushed out of the seed coat and the primary root is just making its appearance. The coleoptile has not yet pushed completely through the seed coat and is also just making its appearance. These 1 day old cold stressed seedlings are frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON~001 (Lib36, Lib83, Lib84) cDNA library is generated from maize leaves at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V8 stage. The older more juvenile leaves in a basal position was well as the younger more adult leaves which are more apical are all cut at the base, pooled and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMONN01 cDNA library is generated from maize (B73, Illinois Foundation Seeds, Champaign, Illinois U.S.A.)normalized immature tassels at the V6 plant development stage normalized tissue. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into

10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V6 stage. At that stage the tassel is an immature tassel of about 2-3 cm in length. The tassels are removed and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN04 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) normalized total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10

inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN05 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) normalized root tissue at the V6 development

stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from the soil. The tissue is immediately frozen in liquid nitrogen and the harvested tissue is then stored at -80°C until RNA preparation. The single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN06 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) normalized total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-

hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The CMZ029 (SATMON036) cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) endosperm 22 days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of the maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergent to withhold the pollen. The ear shoots are pollinated and 22 days after pollination, the ears are pulled out and then the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the alurone layer is removed. After dissection, the endosperms are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The CMz030 (Lib143) cDNA library is generated from maize seedling tissue two days post germination. Seeds are planted on a moist filter paper on a covered try that is keep in the dark until germination. The trays are then moved to the bench top at 15 hr daytime/9 hr nighttime cycles for 2 days post-germination. The day time temperature is 80^{0}F and the

nighttime temperature is 70^{0}F. Tissue is collected when the seedlings are 2 days old. At this stage, the colehrhiza has pushed through the seed coat and the primary root (the radicle) is just piercing the colehrhiza and is barely visible. The seedlings are placed at 42^{0}C for 1 hour. Following the heat shock treatment, the seedlings are immersed in liquid nitrogen and crushed. The harvested tissue is stored at –80^0 until RNA preparation.

The CMz031 (Lib148) cDNA library is generated from maize pollen tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag to withhold pollen. Twenty-one days after pollination, prior to removing the ears, the paper bag is shaken to collect the mature pollen. The mature pollen is immediately frozen in liquid nitrogen containers and the pollen is crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz033 (Lib189) cDNA library is generated from maize pooled leaf tissue. Samples are harvested from open pollinated plants. Tissue is collected from maize leaves at the

anthesis stage. The leaves are collect from from 10-12 plants and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz034 (Lib3060) cDNA library is generated from maize mature tissue at 40 days post pollination plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from leaves located two leaves below the ear leaf. This sample represents those genes expressed during onset and early stages of leaf senescence. The leaves are pooled and immediately transferred to liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz036 (Lib3062) cDNA library is generated from maize husk tissue at the 8 week old plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during

the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from 8 week old plants. The husk is separated from the ear and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz037 (Lib3059) cDNA library is generated from maize pooled kernal at 12-15 days after pollienation plant development stage. Sample were collected from field grown material. Whole kernals from hand pollinated (control pollination) are harvested as whole ears and immediately frozen on dry ice. Kernels from 10-12 ears were pooled and ground together in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz039 (Lib3066) cDNA library is generated from maize immature anther tissue at the 7 week old immature tassel stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 7 week old immature tassel stage. At this stage, prior to anthesis, the

immature anthers are green and enclosed in the staminate spikelet. The developing anthers are dissected away from the 7 week old immature tassel and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz040 (Lib3067) cDNA library is generated from maize kernel tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag before silk emergence to withhold pollen. Five to eight days after controlled pollination. The ears are pulled and the kernels removed. The kernels are immediately frozen in liquid nitrogen. The harvested kernels tissue is then stored at -80°C until RNA preparation. This sample represents gene expressed in early kernel development, during periods of cell division, amyloplast biogenesis and early carbon flow across the material to filial tissue.

The CMz041 (Lib3068) cDNA library is generated from maize pollen germinating silk tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are

transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants when the ear shoots are ready for fertilization at the silk emergence stage. The emerging silks are pollinated with an excess of pollen under controlled pollination conditions in the green house. Eighteen hours after pollination the silks are removed from the ears and immediately frozen in liquid nitrogen containers. This sample represents genes expressed in both pollen and silk tissue early in pollination. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz042 (Lib3069) cDNA library is generated from maize ear tissue excessively pollinated at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F.

Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants and the ear shoots which are ready for fertilization are at the silk emergence stage. The immature ears are pollinated with an excess of pollen under controlled pollination conditions. Eighteen hours post-pollination, the ears are removed and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz044 (Lib3075) cDNA library is generated from maize microspore tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from immature anthers from 7 week old tassels. The immature anthers are first dissected from the 7 week old tassel with a scalpel on a glass slide covered with water. The microspores (immature pollen) are released into the water and are recovered by centrifugation. The microspore suspension is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz045 (Lib3076) cDNA library is generated from maize immature ear megaspore tissue. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing

Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from immature ear (megaspore) obtained from 7 week old plants. The immature ears are harvested from the 7 week old plants and are approximately 2.5 to 3 cm in length. The kernels are removed from the cob immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz047 (Lib3078) cDNA library is generated from maize CO_2 treated high-exposure shoot tissue at the V10+ plant development stage. RX601 maize seeds are sterilized for i minute with a 10% clorox solution. The seeds are rolled in germination paper, and germinated in 0.5 mM calcium sulfate solution for two days ate 30^0C. The seedlings are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium at a rate of 2-3 seedlings per pot. Twenty pots are placed into a high CO_2 environment (approximately 1000 ppm CO_2). Twenty plants were grown under ambient greenhouse CO_2 (approximately 450 ppm CO_2). Plants are watered daily before transplantation and three times a week after transplantation. Peters 20-20-20 fertilizer is also lightly applied. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime

temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. At ten days post planting, the shoots from both atmosphere are frozen in liquid nitrogen and lightly ground. The roots are washed in deionized water to remove the support media and the tissue is immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz048 (Lib3079) cDNA library is generated from maize basal endosperm transfer layer tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ maize plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag prior to silk emergence, to withhold the pollen. Kernels are harvested at 12 days post-pollination and placed on wet ice for dissection. The kernels are cross sectioned laterally, dissecting just above the pedicel region, including 1-2 mm of the lower endosperm and the basal endosperm transfer region. The pedicel and lower endosperm region containing the basal endosperm transfer layer is pooled and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz049(Lib3088) cDNA library is generated from maize immature anther tissue at the 7 week old immature tassel stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 7 week old immature tassel stage. At this stage, prior to anthesis, the immature anthers are green and enclosed in the staminate spikelet. The developing anthers are dissected away from the 7 week old immature tassel and immediately transferred to liquid nitrogen container. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz050 (Lib3114) cDNA library is generated from maize silk tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime

temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is beyond the 10-leaf development stage and the ear shoots are approximately 15-20 cm in length. The ears are pulled and silks are separated from the ears and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON001 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) total leaf tissue at the V4 plant development stage. Leaf tissue from 38, field grown V4 stage plants is harvested from the 4th node. Leaf tissue is removed from the plants and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON002 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue at the V4 plant development stage. Root tissue from 76, field grown V4 stage plants is harvested. The root systems is cut from the soybean plant and washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON003 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling hypocotyl axis tissue harvested 2 day post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even

moisture conditions. Tissue is collected 2 days after the start of imbibition. The 2 days after imbibition samples are separated into 3 collections after removal of any adhering seed coat. At the 2 day stage, the hypocotyl axis is emerging from the soil. A few seedlings have cracked the soil surface and exhibited slight greening of the exposed cotyledons. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON004 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling cotyledon tissue harvested 2 day post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 2 days after the start of imbibition. The 2 days after imbibition samples are separated into 3 collections after removal of any adhering seed coat. At the 2 day stage, the hypocotyl axis is emerging from the soil. A few seedlings have cracked the soil surface and exhibited slight greening of the exposed cotyledons. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON005 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling hypocotyl axis tissue harvested 6 hour post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the

nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 6 hours after the start of imbibition. The 6 hours after imbibition samples are separated into 3 collections after removal of any adhering seed coat. The 6 hours after imbibition sample is collected over the course of approximately 2 hours starting at 6 hours post imbibition. At the 6 hours after imbibition stage, not all cotyledons have become fully hydrated and germination, or radicle protrusion, has not occurred. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON006 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling cotyledons tissue harvest 6 hour post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nightime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 6 hours after imbibition. The 6 hours after imbibition samples are separated into 3 collections after removal of any adhering seed coat. The 6 hours after imbibition sample is collected over the course of approximately 2 hours starting at 6 hours post-imbibition. At the 6 hours after imbibition, not all cotyledons have become fully hydrated and germination or radicle protrusion, have not occurred. The seedlings are washed in water to remove soil, cotyledon harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON007 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 and 35 days post-

flowering. Seed pods from field grown plants are harvested 25 and 35 days after flowering and the seeds extracted from the pods. Approximately 4.4g and 19.3g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON008 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested from 25 and 35 days post-flowering plants. Total leaf tissue is harvested from field grown plants. Approximately 19g and 29g of leaves are harvested from the fourth node of the plant 25 and 35 days post-flowering and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON009 cDNA library is generated from soybean cutlivar C1944 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) pod and seed tissue harvested 15 days post-flowering. Pods from field grown plants are harvested 15 days post-flowering. Approximately 3g of pod tissue is harvested and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON010 cDNA library is generated from soybean cultivar C1944 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) seed tissue harvested 40 days post-flowering. Pods from field grown plants are harvested 40 days post-flowering. Pods and seeds are separated, approximately 19g of seed tissue is harvested and immediately frozen in dry-ice. The harvested tissue is then stored at

-80°C until RNA preparation.

The SOYMON011 cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical

germ plasma) leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON012 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue. Leaves from field grown plants are harvested from the fourth node 15 days post-flowering. Approximately 12g of leaves are harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON013 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root and nodule tissue. Approximately, 28g of root tissue from field grown plants is harvested 15 days post-flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON014 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 and 35 days after flowering. Seed pods from field grown plants are harvested 15 days after flowering and the seeds extracted from the pods. Approximately 5g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON015 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 45 and 55 days post-flowering. Seed pods from field grown plants are harvested 45 and 55 days after flowering and the seeds extracted from the pods. Approximately 19g and 31g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON016 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue. Approximately, 61g and 38g of root tissue from field grown plants is harvested 25 and 35 days post- flowering is harvested. The root system is cut from the soybean plant and washed with water to free it from the soil. The tissue is placed in 14ml polystyrene tubes and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON017 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue. Approximately 28g of root tissue from field grown plants is harvested 45 and 55 days post-flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON018 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested 45 and 55 days post-flowering. Leaves from field grown plants are harvested 45 and 55 days after flowering from the fourth node. Approximately 27g and 33g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON019 cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) root tissue. Roots are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 50g and 56g of roots are harvested from each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON020 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 65 and 75 days post-flowering. Seed pods from field grown plants are harvested 45 and 55 days after flowering and the seeds extracted from the pods. Approximately 14g and 31g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON021 cDNA library is generated from Soybean Cyst Nematode-resistant soybean cultivar Hartwig (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) root tissue. Plants are grown in tissue culture at room temperature. At approximately 6 weeks post-germination, the plants are exposed to sterilized Soybean Cyst Nematode eggs. Infection is then allowed to progress for 10 days. After the 10 day infection process, the tissue is harvested. Agar from the culture medium and nematodes are removed and the root tissue is immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON022 (Lib3030) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) partially opened flower tissue.

Partially to fully opened flower tissue is harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. A total of 3g of flower tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON023 cDNA library is generated from soybean genotype BW211S Null (Tohoku University, Morioka, Japan) seed tissue harvested 15 and 40 days post-flowering. Seed pods from field grown plants are harvested 15 and 40 days post-flowering and the seeds extracted from the pods. Approximately 0.7g and 14.2g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON024 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) internode-2 tissue harvested 18 days post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. The plants are grown in a greenhouse for 18 days after the start of imbibition at ambient temperature. Soil is checked and watered daily to maintain even moisture conditions. Stem tissue is harvested 18 days after the start of imbibition. The samples are divided into hypocotyl and internodes 1 through 5. The fifth internode contains some leaf bud material. Approximately 3 g of each sample is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON025 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested 65 days post-flowering. Leaves are harvested from the fourth node of field grown plants 65 days post-flowering.

Approximately 18.4g of leaf tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

SOYMON026 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue harvested 65 and 75 days post-flowering. Approximately 27g and 40g of root tissue from field grown plants is harvested 65 and 75 days post- flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON027 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 days post-flowering. Seed pods from field grown plants are harvested 25 days post-flowering and the seeds extracted from the pods. Approximately 17g of seeds are harvested from the seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON028 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought-stressed root tissue. The plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of development, water is withheld from half of the plant collection (drought stressed population). After 3 days, half of the plants from the drought stressed condition and half of the plants from the control population are harvested. After another 3 days (6 days post drought induction) the remaining plants are

harvested. A total of 27g and 40g of root tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON029 cDNA library is generated from Soybean Cyst Nematode-resistant soybean cultivar PI07354 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) root tissue. Late fall to early winter greenhouse grown plants are exposed to Soybean Cyst Nematode eggs. At 10 days post-infection, the plants are uprooted, rinsed briefly and the roots frozen in liquid nitrogen. Approximately 20 grams of root tissue is harvested from the infected plants. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON030 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) flower bud tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Flower buds are removed from the plant at the pedicel. A total of 100mg of flower buds are harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON031 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) carpel and stamen tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Flower buds are

removed from the plant at the pedicel. Flowers are dissected to separate petals, sepals and reproductive structures (carpels and stamens). A total of 300mg of carpel and stamen tissue are harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON032 cDNA library is prepared from the Asgrow cultivar A4922 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) rehydrated dry soybean seed meristem tissue. Surface sterilized seeds are germinated in liquid media for 24 hours. The seed axis is then excised from the barely germinating seed, placed on tissue culture media and incubated overnight at 20°C in the dark. The supportive tissue is removed from the explant prior to harvest. Approximately 570mg of tissue is harvested and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON033 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) heat-shocked seedling tissue without cotyledons. Seeds are imbibed and germinated in vermiculite for 2 days under constant illumination. After 48 hours, the seedlings are transferred to an incubator set at 40°C under constant illumination. After 30, 60 and 180 minutes seedlings are harvested and dissected. A portion of the seedling consisting of the root, hypocotyl and apical hook is frozen in liquid nitrogen and stored at -80°C. The seedlings after 2 days of imbibition are beginning to emerge from the vermiculite surface. The apical hooks are dark green in appearance. Total RNA and poly A^+ RNA is prepared from equal amounts of pooled tissue.

The SOYMON034 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) cold-shocked seedling tissue without cotyledons. Seeds are imbibed and germinated in vermiculite for 2 days under constant

illumination. After 48 hours, the seedlings are transferred to a cold room set at 5°C under constant illumination. After 30, 60 and 180 minutes seedlings are harvested and dissected. A portion of the seedling consisting of the root, hypocotyl and apical hook is frozen in liquid nitrogen and stored at -80°C. The seedlings after 2 days of imbibition are beginning to emerge from the vermiculite surface. The apical hooks are dark green in appearance.

The SOYMON035 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed coat tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are harvested from mid to nearly full maturation (seed coats are not yellowing). The entire embryo proper is removed from the seed coat sample and the seed coat tissue are harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON036 cDNA library is generated from soybean cultivars PI171451, PI227687 and PI229358 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) insect challenged leaves. Plants from each of the three cultivars are grown in screenhouse conditions. The screenhouse is divided in half and one half of the screenhouse is infested with soybean looper and the other half infested with velvetbean caterpillar. A single leaf is taken from each of the representative plants at 3 different time points, 11 days after infestation, 2 weeks after infestation and 5 weeks after infestation and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation. Total RNA and poly A+ RNA is

isolated from pooled tissue consisting of equal quantities of all 18 samples (3 genotypes X 3 sample times X 2 insect genotypes).

The SOYMON037 cDNA library is generated from soybean cultivar A3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) etiolated axis and radical tissue. Seeds are planted in moist vermiculite, wrapped and kept at room temperature in complete darkness until harvest. Etiolated axis and hypocotyl tissue is harvested at 2, 3 and 4 days post-planting. A total of 1 gram of each tissue type is harvested at 2, 3 and 4 days after planting and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON038 cDNA library is generated from soybean variety Asgrow A3237 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) rehydrated dry seeds. Explants are prepared for transformation after germination of surface-sterilized seeds on solid tissue media. After 6days, at 28°C and 18 hours of light per day, the germinated seeds are cold shocked at 4°C for 24 hours. Meristemic tissue and part of the hypocotyl is remove and cotyledon excised. The prepared explant is then wounded for *Agrobacterium* infection. The 2 grams of harvested tissue is frozen in liquid nitrogen and stored at -80°C until RNA preparation.

The Soy51 (LIB3027) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The

dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The Soy52 (LIB3028) cDNA library is generated from normalized flower DNA. Single stranded DNA representing approximately 1 X 10^6 colony forming units of SOYMON022 harvested tissue is used as the starting material for normalization. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The Soy53 (LIB3039) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling shoot apical meristem tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Apical tissue is harvested from seedling shoot meristem tissue, 7-8 days after the start of imbibition. The apex of each seedling is dissected to include the fifth node to the apical meristem. The fifth node corresponds to the third trifoliate leaf in the very early stages of development. Stipules completely envelop the leaf primordia at this time. A total of 200mg of apical tissue is harvested

and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The Soy54 (LIB3040) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) heart to torpedo stage embryo tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are collected and embryos removed from surrounding endosperm and maternal tissues. Embryos from globular to young torpedo stages (by corresponding analogy to *Arabidopsis*) are collected with a bias towards the middle of this spectrum. Embryos which are beginning to show asymmetric development of cotyledons are considered the upper developmental boundary for the collection and are excluded. A total of 12 mg embryo tissue is frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy55 (LIB3049) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) young seed tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are collected from very young pods (5 to 15 days after flowering). A total of 100mg of seeds are harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy56 (LIB3029) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are not converted to double stranded form and represent a non-normalized seed pool for comparison to Soy51 cDNA libraries.

TheSoy58 (LIB3050) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed root tissue subtracted from control root tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days root tissue from both drought stressed and control (watered regularly) plants are collected and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that

described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400μl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy59 (LIB3051) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) endosperm tissue. Seeds are germinated on paper towels under laboratory ambient light conditions. At 8, 10 and 14 hours after imbibition, the seed coats are harvested. The endosperm consists of a very thin layer of tissue affixed to the inside of the seed coat. The seed coat and endosperm are frozen immediately after harvest in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The Soy60 (LIB3072) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed seed plus pod subtracted from control seed plus pod tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26°C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and

control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 μl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy61 (LIB3073) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. After 18hours, 24hours and 48 hours post

treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 μl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). For this library's construction, the eighth fraction of the cDNA size fractionation step was used for ligation.

The Soy62 (LIB3074) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St.

Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. After 18 hours, 24 hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 µl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). For this library's construction, the ninth fraction of the cDNA size fractionation step was used for ligation.

The Soy65 (LIB3107) 07cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought-stressed abscission zone tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr

nighttime cycles. The daytime temperature is approximately 29^0C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Plants are irrigated with 15-16-17 Peter's Mix. At the R3 stage of development, drought is imposed by withholding water. At 3, 4, 5 and 6 days, tissue is harvested and wilting is not obvious until the fourth day. Abscission layers from reproductive organs are harvested by cutting less than one millimeter proximal and distal to the layer and immediately frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The Soy66 (LIB3109) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) non-drought stressed abscission zone tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^0C and the nighttime temperature approximately24°C. Soil is checked and watered daily to maintain even moisture conditions. Plants are irrigated with 15-16-17 Peter's Mix. At 3, 4, 5 and 6 days, control abscission layer tissue is harvested. Abscission layers from reproductive organs are harvested by cutting less than one millimeter proximal and distal to the layer and immediately frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy67 (LIB3065) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar

ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. Captured hybrids are eluted with water.

Soy68 (LIB3052) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. Captured hybrids are eluted with water.

Soy69 (LIB3053) cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) normalized leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the

synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

Soy70 (LIB3055) cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

Soy71 (LIB3056) cDNA library is generated from soybean cultivars Cristalina and FT108 (tropical germ plasma) root tissue. Roots are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 50g and 56g of roots are harvested from each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

Soy72 (LIB3093) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed leaf control tissue. Seeds

are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26^{0}C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 µl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

Soy73 (LIB3093) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed leaf subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under

12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26°C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 μl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy76 (Lib3106) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid and arachidonic treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the

plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. Arachidonic treated seedlings are sprayed with 1m/ml arachidonic acid in 0.1% Tween-20. After 18hours, 24hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. The RNA from the arachidonic treated seedlings is isolated separately. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 µl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). Fraction 10 of the size fractionated cDNA is ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.) in order to capture some of the smaller transcripts characteristic of antifungal proteins.

Soy77 (LIB3108) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4^{0}C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. Arachidonic treated seedlings are sprayed with 1m/ml arachidonic acid in 0.1% Tween-20. After 18 hours, 24 hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. The RNA from the arachidonic treated seedlings is isolated separately. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 μl 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After

hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). Fraction 10 of the size fractionated cDNA is ligated into the pSPORT vector in order to capture some of the smaller transcripts characteristic of antifungal proteins.

The stored RNA is purified using Trizol reagent from Life Technologies (Gibco BRL, Life Technologies, Gaithersburg, Maryland U.S.A.), essentially as recommended by the manufacturer. Poly A+ RNA (mRNA) is purified using magnetic oligo dT beads essentially as recommended by the manufacturer (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.).

Construction of plant cDNA libraries is well-known in the art and a number of cloning strategies exist. A number of cDNA library construction kits are commercially available. The Superscript™ Plasmid System for cDNA synthesis and Plasmid Cloning (Gibco BRL, Life Technologies, Gaithersburg, Maryland U.S.A.) is used, following the conditions suggested by the manufacturer.

Normalized libraries are made using essentially the Soares procedure (Soares *et al., Proc. Natl. Acad. Sci. (U.S.A.) 91:*9228-9232 (1994), the entirety of which is herein incorporated by reference). This approach is designed to reduce the initial 10,000-fold variation in individual cDNA frequencies to achieve abundances within one order of magnitude while maintaining the overall sequence complexity of the library. In the normalization process, the prevalence of high-abundance cDNA clones decreases dramatically, clones with mid-level abundance are relatively unaffected and clones for rare transcripts are effectively increased in abundance.

Example 2

The cDNA libraries are plated on LB agar containing the appropriate antibiotics for selection and incubated at 37° for a sufficient time to allow the growth of individual colonies. Single colonies are individually placed in each well of a 96-well microtiter plates containing LB liquid including the selective antibiotics. The plates are incubated overnight at approximately 37°C with gentle shaking to promote growth of the cultures. The plasmid DNA is isolated from each clone using Qiaprep plasmid isolation kits, using the conditions recommended by the manufacturer (Qiagen Inc., Santa Clara, California U.S.A.).

Template plasmid DNA clones are used for subsequent sequencing. For sequencing, the ABI PRISM dRhodamine Terminator Cycle Sequencing Ready Reaction Kit with AmpliTaq® DNA Polymerase, FS, is used (PE Applied Biosystems, Foster City, California U.S.A.).

Example 3

Nucleic acid sequences that encode for the following proteins: methionine adenosyltransferase, S-adenosylmethionine decarboxylase, aspartate kinase, aspartate-semialdehyde dehydrogenase, *O*-succinylhomoserine (thiol)-lyase, cystathionine β-lyase, 5-methyltetrahydropteroyltriglutamate, adenosylhomocysteinase, cystathionine β-synthase, cystathionine γ-lyase and *O*-acetylhomoserine (thiol)-lyase are identified from the Monsanto EST PhytoSeq database using TBLASTN (default values)(TBLASTN compares a protein query against the six reading frames of a nucleic acid sequence). Matches found with BLAST P values equal or less than 0.001 (probability) or BLAST Score of equal or greater than 90 are classified as hits. If the program used to determine the hit is HMMSW then the score refers to HMMSW score.

In addition, the GenBank database is searched with BLASTN and BLASTX (default values) using ESTs as queries. EST that pass the hit probability threshold of $10e^{-8}$ for the following enzymes are combined with the hits generated by using TBLASTN (described above) and classified by enzyme (see Table A below).

A cluster refers to a set of overlapping clones in the PhytoSeq database. Such an overlapping relationship among clones is designated as a "cluster" when BLAST scores from pairwise sequence comparisons of the member clones meets a predetermined minimum value or product score of 50 or more (Product Score = (BLAST SCORE x Percentage Identity)/(5 x minimum [length (Seq1), length (Seq2)]))

Since clusters are formed on the basis of single-linkage relationships, it is possible for two non-overlapping clones to be members of the same cluster if, for instance, they both overlap a third clone with at least the predetermined minimum BLAST score (stringency). A cluster ID is arbitrarily assigned to all of those clones which belong to the same cluster at a given stringency and a particular clone will belong to only one cluster at a given stringency. If a cluster contains only a single clone (a "singleton"), then the cluster ID number will be negative, with an absolute value equal to the clone ID number of its single member. Clones grouped in a cluster in most cases represent a contiguous sequence.

TABLE A*

METHIONINE ADENOSYLTRANSFERASE (EC 2.5.1.6)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
1	-700019427	700019427H1	SATMON001	g17262	BLASTX	120	1e-11	92
2	-700074004	700074004H1	SATMON007	g1778820	BLASTN	830	1e-60	80
3	-700149718	700149718H1	SATMON007	g1778820	BLASTN	263	1e-13	80
4	-700220251	700220251H1	SATMON011	g1127582	BLASTN	243	1e-9	90
5	-700458196	700458196H1	SATMON029	g1778820	BLASTN	202	1e-22	88
6	-701172459	701172459H1	SATMONN05	g882334	BLASTN	801	1e-57	89
7	-L1436317	LIB143-062-Q1-E1-B6	LIB143	g1778820	BLASTN	341	1e-19	77
8	-L1893126	LIB189-021-Q1-E1-F4	LIB189	g1778820	BLASTN	629	1e-41	88
9	-L1894542	LIB189-033-Q1-E1-H12	LIB189	g1778820	BLASTN	564	1e-60	76
10	-L30622839	LIB3062-028-Q1-K1-C2	LIB3062	g1778820	BLASTN	625	1e-65	74
11	-L30671966	LIB3067-036-Q1-K1-D8	LIB3067	g1655576	BLASTX	118	1e-25	85
12	-L30682166	LIB3068-004-Q1-K1-D5	LIB3068	g497900	BLASTX	111	1e-29	47
13	1	LIB143-036-Q1-E1-G7	LIB143	g450548	BLASTN	1766	1e-138	88
14	1	LIB3060-013-Q1-K1-F7	LIB3060	g1778820	BLASTN	1702	1e-133	90
15	1	LIB143-013-Q1-E1-A6	LIB143	g1778820	BLASTN	1712	1e-133	88
16	1	LIB148-007-Q1-E1-B8	LIB148	g450548	BLASTN	1693	1e-132	88
17	1	LIB3079-003-Q1-K1-G1	LIB3079	g1778820	BLASTN	1236	1e-130	88
18	1	LIB3066-011-Q1-K1-E4	LIB3066	g1778820	BLASTN	1661	1e-129	86
19	1	LIB3068-008-Q1-K1-D2	LIB3068	g450548	BLASTN	1192	1e-128	88
20	1	LIB143-061-Q1-E1-E7	LIB143	g1778820	BLASTN	1638	1e-127	88
21	1	LIB189-006-Q1-E1-B2	LIB189	g1778820	BLASTN	1627	1e-126	86
22	1	LIB143-031-Q1-E1-C7	LIB143	g450548	BLASTN	1595	1e-124	86
23	1	LIB3068-011-Q1-K1-B12	LIB3068	g450548	BLASTN	1552	1e-123	87
24	1	LIB143-013-Q1-E1-G11	LIB143	g450548	BLASTN	1585	1e-123	88
25	1	LIB3062-057-Q1-K1-H9	LIB3062	g450548	BLASTN	1577	1e-122	89
26	1	LIB143-008-Q1-E1-G9	LIB143	g450548	BLASTN	1556	1e-120	89
27	1	LIB3068-058-Q1-K1-B7	LIB3068	g450548	BLASTN	1470	1e-118	86
28	1	LIB3067-048-Q1-K1-G5	LIB3067	g1778820	BLASTN	1518	1e-117	89
29	1	LIB143-049-Q1-E1-A12	LIB143	g1778820	BLASTN	1480	1e-114	91
30	1	LIB3062-010-Q1-K1-C7	LIB3062	g1778820	BLASTN	1145	1e-113	87
31	1	LIB3068-055-Q1-K1-E10	LIB3068	g450548	BLASTN	1451	1e-112	88
32	1	LIB189-025-Q1-E1-H1	LIB189	g1778820	BLASTN	1460	1e-112	90
33	1	LIB143-066-Q1-E1-F4	LIB143	g1778820	BLASTN	1309	1e-111	86
34	1	LIB143-003-Q1-E1-D10	LIB143	g1778820	BLASTN	1440	1e-111	87
35	1	LIB3062-033-Q1-K1-G1	LIB3062	g1778820	BLASTN	1449	1e-111	86
36	1	LIB3066-029-Q1-K1-H11	LIB3066	g1778820	BLASTN	1427	1e-110	88
37	1	LIB3068-016-Q1-K1-D9	LIB3068	g450548	BLASTN	1213	1e-109	87
38	1	LIB3062-027-Q1-K1-B11	LIB3062	g1778820	BLASTN	1187	1e-108	87
39	1	LIB3068-048-Q1-K1-G4	LIB3068	g1778820	BLASTN	1410	1e-108	82
40	1	LIB148-020-Q1-E1-B6	LIB148	g1778820	BLASTN	1088	1e-107	84
41	1	LIB3066-046-Q1-K1-F2	LIB3066	g1778820	BLASTN	1400	1e-107	90
42	1	700084130H1	SATMON011	g1778820	BLASTN	960	1e-106	92
43	1	700092863H1	SATMON008	g1778820	BLASTN	1388	1e-106	92
44	1	LIB3068-043-Q1-K1-A12	LIB3068	g450548	BLASTN	827	1e-105	81
45	1	700092659H1	SATMON008	g1778820	BLASTN	1359	1e-104	92
46	1	LIB143-038-Q1-E1-H11	LIB143	g450548	BLASTN	1345	1e-103	84
47	1	LIB3062-028-Q1-K1-F12	LIB3062	g1778820	BLASTN	1082	1e-102	82
48	1	700103135H1	SATMON010	g1778820	BLASTN	1306	1e-100	93

49	1	LIB3078-050-Q1-K1-D9	LIB3078	g1778820	BLASTN	1309	1e-100	86
50	1	700084823H1	SATMON011	g1778820	BLASTN	1311	1e-100	90
51	1	700201311H1	SATMON003	g1778820	BLASTN	960	1e-97	89
52	1	700265914H1	SATMON017	g1778820	BLASTN	1275	1e-97	91
53	1	700205948H1	SATMON003	g1778820	BLASTN	983	1e-96	93
54	1	LIB189-003-Q1-E1-A6	LIB189	g450548	BLASTN	1262	1e-96	86
55	1	LIB143-017-Q1-E1-B9	LIB143	g1778820	BLASTN	779	1e-95	86
56	1	700097434H1	SATMON009	g450548	BLASTN	1247	1e-95	90
57	1	700089089H1	SATMON011	g450548	BLASTN	1251	1e-95	89
58	1	700071949H1	SATMON007	g1778820	BLASTN	1256	1e-95	87
59	1	700047892H1	SATMON003	g1778820	BLASTN	1236	1e-94	91
60	1	700077246H1	SATMON007	g450548	BLASTN	1237	1e-94	89
61	1	700085681H1	SATMON011	g1778820	BLASTN	1237	1e-94	89
62	1	LIB3067-010-Q1-K1-A7	LIB3067	g1778820	BLASTN	1244	1e-94	83
63	1	700619961H1	SATMON034	g450548	BLASTN	962	1e-93	89
64	1	700087395H1	SATMON011	g450548	BLASTN	1040	1e-93	89
65	1	700240431H1	SATMON010	g1778820	BLASTN	1156	1e-93	92
66	1	700053822H1	SATMON011	g1778820	BLASTN	1224	1e-93	91
67	1	700103856H1	SATMON010	g450548	BLASTN	1224	1e-93	88
68	1	700083703H1	SATMON011	g450548	BLASTN	1229	1e-93	89
69	1	700087360H1	SATMON011	g450548	BLASTN	1234	1e-93	90
70	1	700104713H1	SATMON010	g450548	BLASTN	1188	1e-92	87
71	1	700265996H1	SATMON017	g450548	BLASTN	1214	1e-92	88
72	1	700264870H1	SATMON017	g450548	BLASTN	945	1e-91	89
73	1	700219348H1	SATMON011	g1778820	BLASTN	1203	1e-91	91
74	1	700095527H1	SATMON008	g450548	BLASTN	1153	1e-90	88
75	1	LIB3068-023-Q1-K1-G5	LIB3068	g1778820	BLASTN	1187	1e-90	89
76	1	700102547H1	SATMON010	g1778820	BLASTN	1194	1e-90	88
77	1	700332179H1	SATMON019	g450548	BLASTN	1054	1e-89	88
78	1	700405470H1	SATMON029	g450548	BLASTN	1071	1e-89	90
79	1	LIB3069-043-Q1-K1-G2	LIB3069	g450548	BLASTN	1175	1e-89	84
80	1	700451332H1	SATMON028	g450548	BLASTN	1176	1e-89	90
81	1	700028108H1	SATMON003	g450548	BLASTN	1180	1e-89	89
82	1	700076154H1	SATMON007	g1778820	BLASTN	1180	1e-89	89
83	1	700089770H1	SATMON011	g450548	BLASTN	1185	1e-89	89
84	1	700051882H1	SATMON003	g1778820	BLASTN	844	1e-88	91
85	1	700242942H1	SATMON010	g1778820	BLASTN	1163	1e-88	91
86	1	700094996H1	SATMON008	g1778820	BLASTN	1166	1e-88	88
87	1	700476239H1	SATMON025	g450548	BLASTN	1166	1e-88	89
88	1	700219530H1	SATMON011	g1778820	BLASTN	1005	1e-87	91
89	1	700049726H1	SATMON003	g1778820	BLASTN	1041	1e-87	89
90	1	700096904H1	SATMON008	g1778820	BLASTN	1157	1e-87	86
91	1	700344026H1	SATMON021	g450548	BLASTN	1158	1e-87	88
92	1	700105590H1	SATMON010	g1778820	BLASTN	1139	1e-86	89
93	1	700465283H1	SATMON025	g450548	BLASTN	1145	1e-86	89
94	1	700104341H1	SATMON010	g450548	BLASTN	1146	1e-86	87
95	1	LIB3062-021-Q1-K1-F12	LIB3062	g1778820	BLASTN	923	1e-85	78
96	1	700105246H1	SATMON010	g450548	BLASTN	930	1e-85	89
97	1	700072146H1	SATMON007	g1778820	BLASTN	1131	1e-85	91
98	1	700028553H1	SATMON003	g1778820	BLASTN	1132	1e-85	88
99	1	700451419H1	SATMON028	g450548	BLASTN	1133	1e-85	89
100	1	700103241H1	SATMON010	g450548	BLASTN	1134	1e-85	90
101	1	700612549H1	SATMON033	g450548	BLASTN	1134	1e-85	89
102	1	700050434H1	SATMON003	g450548	BLASTN	723	1e-84	89

103	1	700094764H1	SATMON008	g1778820	BLASTN	977	1e-84	86
104	1	700163030H1	SATMON013	g1778820	BLASTN	1011	1e-84	93
105	1	700466542H1	SATMON025	g450548	BLASTN	1085	1e-84	89
106	1	700047380H1	SATMON003	g450548	BLASTN	1096	1e-84	89
107	1	700456429H1	SATMON029	g450548	BLASTN	1118	1e-84	88
108	1	700096049H1	SATMON008	g1778820	BLASTN	1122	1e-84	86
109	1	700075906H1	SATMON007	g1778820	BLASTN	838	1e-83	86
110	1	LIB3067-048-Q1-K1-G3	LIB3067	g1778820	BLASTN	1045	1e-83	86
111	1	700214043H1	SATMON016	g450548	BLASTN	1103	1e-83	88
112	1	700096909H1	SATMON008	g1778820	BLASTN	1103	1e-83	90
113	1	701184635H1	SATMONN06	g1778820	BLASTN	1104	1e-83	87
114	1	700158969H1	SATMON012	g1778820	BLASTN	1107	1e-83	93
115	1	700475902H1	SATMON025	g450548	BLASTN	1112	1e-83	89
116	1	700207076H1	SATMON003	g1778820	BLASTN	1113	1e-83	90
117	1	700161901H1	SATMON012	g1778820	BLASTN	1091	1e-82	91
118	1	700452183H1	SATMON028	g450548	BLASTN	1095	1e-82	88
119	1	700452326H1	SATMON028	g450548	BLASTN	1098	1e-82	88
120	1	700106918H1	SATMON010	g450548	BLASTN	1101	1e-82	88
121	1	700220146H1	SATMON011	g450548	BLASTN	1083	1e-81	89
122	1	700221060H1	SATMON011	g450548	BLASTN	1084	1e-81	88
123	1	700243344H1	SATMON010	g1778820	BLASTN	1084	1e-81	92
124	1	700475790H1	SATMON025	g450548	BLASTN	1084	1e-81	89
125	1	700452691H1	SATMON028	g1778820	BLASTN	1086	1e-81	87
126	1	700243733H1	SATMON010	g450548	BLASTN	1086	1e-81	90
127	1	LIB3059-018-Q1-K1-D10	LIB3059	g1778820	BLASTN	830	1e-80	91
128	1	700165958H1	SATMON013	g450548	BLASTN	1070	1e-80	89
129	1	700082659H1	SATMON011	g1778820	BLASTN	1071	1e-80	88
130	1	700172557H1	SATMON013	g1778820	BLASTN	1074	1e-80	92
131	1	700221526H1	SATMON011	g450548	BLASTN	1075	1e-80	88
132	1	700456696H1	SATMON029	g450548	BLASTN	1077	1e-80	89
133	1	700430776H1	SATMONN01	g1778820	BLASTN	574	1e-79	90
134	1	LIB3062-025-Q1-K1-B11	LIB3062	g450548	BLASTN	585	1e-79	85
135	1	700077126H1	SATMON007	g1778820	BLASTN	743	1e-79	88
136	1	700160310H1	SATMON012	g1778820	BLASTN	752	1e-79	91
137	1	700030466H1	SATMON003	g1778820	BLASTN	757	1e-79	83
138	1	700210204H1	SATMON016	g1778820	BLASTN	844	1e-79	91
139	1	700094716H1	SATMON008	g1778820	BLASTN	857	1e-79	86
140	1	700157051H1	SATMON012	g1778820	BLASTN	937	1e-79	89
141	1	700241415H1	SATMON010	g450548	BLASTN	1055	1e-79	90
142	1	700160127H1	SATMON012	g450548	BLASTN	1056	1e-79	88
143	1	700205485H1	SATMON003	g1778820	BLASTN	1059	1e-79	90
144	1	700475930H1	SATMON025	g450548	BLASTN	1060	1e-79	89
145	1	700161902H1	SATMON012	g1778820	BLASTN	1060	1e-79	91
146	1	700213573H1	SATMON016	g450548	BLASTN	1061	1e-79	89
147	1	700207677H1	SATMON016	g450548	BLASTN	1061	1e-79	88
148	1	700581117H1	SATMON031	g450548	BLASTN	1065	1e-79	88
149	1	700451418H1	SATMON028	g450548	BLASTN	546	1e-78	89
150	1	700212606H1	SATMON016	g1778820	BLASTN	1044	1e-78	85
151	1	700222605H1	SATMON011	g1778820	BLASTN	1047	1e-78	86
152	1	700050542H1	SATMON003	g1778820	BLASTN	1053	1e-78	86
153	1	700450709H1	SATMON028	g450548	BLASTN	834	1e-77	88
154	1	700213368H1	SATMON016	g450548	BLASTN	861	1e-77	89
155	1	700095926H1	SATMON008	g1778820	BLASTN	1030	1e-77	86
156	1	700261686H1	SATMON017	g1778820	BLASTN	1034	1e-77	89

157	1	700235993H1	SATMON010	g450548	BLASTN	1037	1e-77	88
158	1	700466152H1	SATMON025	g450548	BLASTN	1038	1e-77	89
159	1	700266410H1	SATMON017	g1778820	BLASTN	1041	1e-77	85
160	1	700216991H1	SATMON016	g1778820	BLASTN	491	1e-76	92
161	1	700464957H1	SATMON025	g450548	BLASTN	607	1e-76	88
162	1	700160463H1	SATMON012	g1778820	BLASTN	1018	1e-76	91
163	1	700158224H1	SATMON012	g1778820	BLASTN	1018	1e-76	92
164	1	700469971H1	SATMON025	g1778820	BLASTN	1020	1e-76	86
165	1	700222731H1	SATMON011	g450548	BLASTN	1022	1e-76	88
166	1	700087434H1	SATMON011	g1778820	BLASTN	1023	1e-76	86
167	1	700094482H1	SATMON008	g1778820	BLASTN	1023	1e-76	86
168	1	700235976H1	SATMON010	g450548	BLASTN	1028	1e-76	89
169	1	700088266H1	SATMON011	g1778820	BLASTN	983	1e-75	92
170	1	700075882H1	SATMON007	g1778820	BLASTN	1009	1e-75	83
171	1	700243324H1	SATMON010	g1778820	BLASTN	1012	1e-75	86
172	1	700159625H2	SATMON012	g450548	BLASTN	1015	1e-75	90
173	1	700204422H1	SATMON003	g1778820	BLASTN	1015	1e-75	88
174	1	700048228H1	SATMON003	g1778820	BLASTN	741	1e-74	85
175	1	700072474H1	SATMON007	g1778820	BLASTN	799	1e-74	85
176	1	700477790H1	SATMON025	g450548	BLASTN	960	1e-74	89
177	1	LIB3059-022-Q1-K1-A9	LIB3059	g1778820	BLASTN	995	1e-74	86
178	1	700241633H1	SATMON010	g450548	BLASTN	997	1e-74	89
179	1	700093978H1	SATMON008	g1778820	BLASTN	999	1e-74	89
180	1	700238569H1	SATMON010	g450548	BLASTN	844	1e-73	88
181	1	700455160H1	SATMON029	g450548	BLASTN	849	1e-73	86
182	1	700262745H1	SATMON017	g1778820	BLASTN	984	1e-73	85
183	1	700405029H1	SATMON027	g1778820	BLASTN	990	1e-73	90
184	1	700195230H1	SATMON014	g450548	BLASTN	991	1e-73	88
185	1	700264753H1	SATMON017	g1778820	BLASTN	993	1e-73	90
186	1	700050142H1	SATMON003	g1778820	BLASTN	433	1e-72	86
187	1	700452677H1	SATMON028	g450548	BLASTN	919	1e-72	87
188	1	700168870H1	SATMON013	g1778820	BLASTN	971	1e-72	90
189	1	700023193H1	SATMON003	g450548	BLASTN	972	1e-72	88
190	1	700086582H1	SATMON011	g1778820	BLASTN	980	1e-72	84
191	1	700457710H1	SATMON029	g450548	BLASTN	982	1e-72	87
192	1	700477601H1	SATMON025	g450548	BLASTN	635	1e-71	88
193	1	700377730H1	SATMON019	g1778820	BLASTN	691	1e-71	87
194	1	700169782H1	SATMON013	g1778820	BLASTN	960	1e-71	91
195	1	700461113H1	SATMON033	g1778820	BLASTN	962	1e-71	85
196	1	700258669H1	SATMON017	g1778820	BLASTN	963	1e-71	90
197	1	700454253H1	SATMON029	g1778820	BLASTN	964	1e-71	85
198	1	700092376H1	SATMON008	g1778820	BLASTN	780	1e-70	83
199	1	700242885H1	SATMON010	g960356	BLASTN	946	1e-70	86
200	1	700094333H1	SATMON008	g1778820	BLASTN	947	1e-70	86
201	1	700575124H1	SATMON030	g450548	BLASTN	948	1e-70	82
202	1	700072544H1	SATMON007	g1778820	BLASTN	949	1e-70	86
203	1	LIB143-046-Q1-E1-B5	LIB143	g450548	BLASTN	951	1e-70	87
204	1	700096534H1	SATMON008	g1778820	BLASTN	956	1e-70	85
205	1	700262906H1	SATMON017	g1778820	BLASTN	937	1e-69	87
206	1	700094478H1	SATMON008	g1778820	BLASTN	939	1e-69	90
207	1	700172985H1	SATMON013	g450548	BLASTN	939	1e-69	88
208	1	700097938H1	SATMON009	g1778820	BLASTN	941	1e-69	85
209	1	LIB3069-006-Q1-K1-D5	LIB3069	g450548	BLASTN	943	1e-69	88
210	1	700093125H1	SATMON008	g1778820	BLASTN	945	1e-69	88

211	1	700424156H1	SATMONN01	g450548	BLASTN	752	1e-68	85
212	1	700405486H1	SATMON029	g450548	BLASTN	864	1e-68	91
213	1	LIB189-026-Q1-E1-H12	LIB189	g1778820	BLASTN	879	1e-68	87
214	1	700106172H1	SATMON010	g1778820	BLASTN	925	1e-68	85
215	1	700096890H1	SATMON008	g1778820	BLASTN	926	1e-68	90
216	1	700154404H1	SATMON007	g450548	BLASTN	928	1e-68	89
217	1	700468337H1	SATMON025	g450548	BLASTN	445	1e-67	88
218	1	700158827H1	SATMON012	g1778820	BLASTN	522	1e-67	87
219	1	700241744H1	SATMON010	g1778820	BLASTN	575	1e-67	85
220	1	700624633H1	SATMON034	g960356	BLASTN	644	1e-67	85
221	1	700154564H1	SATMON007	g1778820	BLASTN	735	1e-67	85
222	1	700172424H1	SATMON013	g450548	BLASTN	912	1e-67	90
223	1	700096287H1	SATMON008	g1778820	BLASTN	914	1e-67	86
224	1	700207638H1	SATMON016	g1778820	BLASTN	914	1e-67	86
225	1	700093735H1	SATMON008	g960356	BLASTN	920	1e-67	89
226	1	700159494H1	SATMON012	g1778820	BLASTN	899	1e-66	89
227	1	700236013H1	SATMON010	g1778820	BLASTN	900	1e-66	83
228	1	700220267H1	SATMON011	g1778820	BLASTN	439	1e-65	84
229	1	700477578H1	SATMON025	g450548	BLASTN	576	1e-65	90
230	1	700047743H1	SATMON003	g1778820	BLASTN	601	1e-65	82
231	1	700343041H1	SATMON021	g1778820	BLASTN	633	1e-65	86
232	1	700159886H1	SATMON012	g450548	BLASTN	803	1e-65	85
233	1	700570242H1	SATMON030	g450548	BLASTN	834	1e-65	85
234	1	700021930H1	SATMON001	g1778820	BLASTN	888	1e-65	87
235	1	700454959H1	SATMON029	g450548	BLASTN	890	1e-65	89
236	1	700171336H1	SATMON013	g1778820	BLASTN	890	1e-65	89
237	1	700105361H1	SATMON010	g1778820	BLASTN	806	1e-64	87
238	1	LIB3068-031-Q1-K1-B1	LIB3068	g450548	BLASTN	853	1e-64	89
239	1	700236324H1	SATMON010	g450548	BLASTN	875	1e-64	89
240	1	700150620H1	SATMON007	g450548	BLASTN	880	1e-64	87
241	1	700220648H1	SATMON011	g450548	BLASTN	881	1e-64	90
242	1	700150733H1	SATMON007	g450548	BLASTN	881	1e-64	85
243	1	700157367H1	SATMON012	g1778820	BLASTN	882	1e-64	85
244	1	700259676H1	SATMON017	g1778820	BLASTN	885	1e-64	88
245	1	700616490H1	SATMON033	g450548	BLASTN	886	1e-64	82
246	1	700102511H1	SATMON010	g450548	BLASTN	695	1e-63	89
247	1	700202805H1	SATMON003	g1778820	BLASTN	817	1e-63	92
248	1	700105685H1	SATMON010	g1778820	BLASTN	866	1e-63	84
249	1	700106113H1	SATMON010	g450548	BLASTN	873	1e-63	91
250	1	700444778H1	SATMON027	g1778820	BLASTN	343	1e-62	84
251	1	700103584H1	SATMON010	g450548	BLASTN	521	1e-62	86
252	1	LIB189-008-Q1-E1-D9	LIB189	g1778820	BLASTN	850	1e-62	91
253	1	700155684H1	SATMON007	g1778820	BLASTN	852	1e-62	85
254	1	700261639H1	SATMON017	g1778820	BLASTN	853	1e-62	89
255	1	700158367H1	SATMON012	g450548	BLASTN	856	1e-62	81
256	1	700153242H1	SATMON007	g1778820	BLASTN	859	1e-62	90
257	1	700210738H1	SATMON016	g1778820	BLASTN	859	1e-62	90
258	1	700203008H1	SATMON003	g450548	BLASTN	698	1e-61	86
259	1	700206081H1	SATMON003	g1778820	BLASTN	840	1e-61	92
260	1	700028643H1	SATMON003	g1778820	BLASTN	846	1e-61	85
261	1	700223914H1	SATMON011	g1778820	BLASTN	849	1e-61	84
262	1	700571455H1	SATMON030	g1778820	BLASTN	378	1e-60	88
263	1	700075374H1	SATMON007	g1778820	BLASTN	830	1e-60	85
264	1	700150452H1	SATMON007	g450548	BLASTN	831	1e-60	89

265	1	700261318H1	SATMON017	g1778820	BLASTN	831	1e-60	83
266	1	700616390H1	SATMON033	g450548	BLASTN	835	1e-60	92
267	1	700208718H1	SATMON016	g450548	BLASTN	561	1e-59	89
268	1	700448948H1	SATMON028	g1778820	BLASTN	653	1e-59	83
269	1	LIB3060-035-Q1-K1-H3	LIB3060	g450548	BLASTN	734	1e-59	85
270	1	700049753H1	SATMON003	g450548	BLASTN	769	1e-59	90
271	1	700154489H1	SATMON007	g1778820	BLASTN	814	1e-59	83
272	1	700170783H1	SATMON013	g1778820	BLASTN	816	1e-59	87
273	1	700237571H1	SATMON010	g450548	BLASTN	817	1e-59	89
274	1	700154872H1	SATMON007	g1778820	BLASTN	822	1e-59	85
275	1	700025620H1	SATMON004	g1778820	BLASTN	686	1e-58	84
276	1	700158255H1	SATMON012	g450548	BLASTN	803	1e-58	86
277	1	700159282H1	SATMON012	g450548	BLASTN	805	1e-58	83
278	1	700222171H1	SATMON011	g1778820	BLASTN	807	1e-58	89
279	1	700205003H1	SATMON003	g1778820	BLASTN	441	1e-57	86
280	1	700049209H1	SATMON003	g1778820	BLASTN	443	1e-57	90
281	1	700016430H1	SATMON001	g1778820	BLASTN	492	1e-57	86
282	1	700212936H1	SATMON016	g450548	BLASTN	564	1e-57	86
283	1	700156939H1	SATMON012	g1778820	BLASTN	801	1e-57	84
284	1	700222183H1	SATMON011	g1778820	BLASTN	561	1e-56	83
285	1	700203453H1	SATMON003	g1778820	BLASTN	784	1e-56	90
286	1	700167708H1	SATMON013	g1778820	BLASTN	560	1e-55	83
287	1	700214356H1	SATMON016	g1778820	BLASTN	693	1e-55	87
288	1	700475377H1	SATMON025	g450548	BLASTN	705	1e-55	90
289	1	700029625H1	SATMON003	g450548	BLASTN	712	1e-55	88
290	1	700202091H1	SATMON003	g1778820	BLASTN	774	1e-55	90
291	1	700264594H1	SATMON017	g450548	BLASTN	775	1e-55	89
292	1	700074969H1	SATMON007	g450548	BLASTN	777	1e-55	87
293	1	LIB3068-005-Q1-K1-A9	LIB3068	g1778820	BLASTN	389	1e-54	80
294	1	700207147H1	SATMON017	g1778820	BLASTN	537	1e-54	88
295	1	LIB189-004-Q1-E1-F11	LIB189	g960356	BLASTN	757	1e-54	87
296	1	700171222H1	SATMON013	g1778820	BLASTN	757	1e-54	93
297	1	700239903H1	SATMON010	g1778820	BLASTN	760	1e-54	84
298	1	700048208H1	SATMON003	g1778820	BLASTN	762	1e-54	90
299	1	700264085H1	SATMON017	g450548	BLASTN	764	1e-54	87
300	1	700155761H1	SATMON007	g1778820	BLASTN	579	1e-53	85
301	1	700216516H1	SATMON016	g450548	BLASTN	380	1e-52	89
302	1	LIB3068-044-Q1-K1-F12	LIB3068	g450548	BLASTN	492	1e-52	73
303	1	700344420H1	SATMON021	g450548	BLASTN	534	1e-52	79
304	1	700219767H1	SATMON011	g450548	BLASTN	732	1e-52	88
305	1	700153757H1	SATMON007	g1778820	BLASTN	737	1e-52	89
306	1	700165841H1	SATMON013	g450548	BLASTN	738	1e-52	90
307	1	700381966H1	SATMON023	g1778820	BLASTN	740	1e-52	86
308	1	700170427H1	SATMON013	g450548	BLASTN	687	1e-51	89
309	1	700094344H1	SATMON008	g1778820	BLASTN	725	1e-51	93
310	1	700052248H1	SATMON003	g1778820	BLASTN	726	1e-51	84
311	1	700050628H1	SATMON003	g450548	BLASTN	726	1e-51	89
312	1	700223031H1	SATMON011	g1778820	BLASTN	729	1e-51	89
313	1	700475686H1	SATMON025	g450548	BLASTN	660	1e-50	89
314	1	700170325H1	SATMON013	g2305013	BLASTN	709	1e-50	82
315	1	700221107H1	SATMON011	g450548	BLASTN	698	1e-49	89
316	1	700612589H1	SATMON033	g960356	BLASTN	703	1e-49	89
317	1	700153770H1	SATMON007	g1778820	BLASTN	705	1e-49	88
318	1	LIB3078-006-Q1-K1-E7	LIB3078	g1778820	BLASTN	705	1e-49	79

319	1	700239724H1	SATMON010	g1778820	BLASTN	507	1e-48	78
320	1	700356777H1	SATMON024	g1778820	BLASTN	683	1e-48	86
321	1	700241568H1	SATMON010	g960356	BLASTN	691	1e-48	88
322	1	700051294H1	SATMON003	g1778820	BLASTN	462	1e-47	88
323	1	700343661H1	SATMON021	g450548	BLASTN	507	1e-47	81
324	1	700029419H1	SATMON003	g1778820	BLASTN	547	1e-47	87
325	1	700165936H1	SATMON013	g1778820	BLASTN	671	1e-47	83
326	1	700026152H1	SATMON003	g960356	BLASTN	673	1e-47	89
327	1	700075671H1	SATMON007	g450548	BLASTN	429	1e-46	89
328	1	700156674H1	SATMON012	g1778820	BLASTN	659	1e-46	91
329	1	700094981H1	SATMON008	g1778820	BLASTN	662	1e-46	85
330	1	700092879H1	SATMON008	g1778820	BLASTN	668	1e-46	87
331	1	700240685H1	SATMON010	g1778820	BLASTN	484	1e-45	84
332	1	700150286H1	SATMON007	g1778820	BLASTN	647	1e-45	82
333	1	700104990H1	SATMON010	g450548	BLASTN	652	1e-45	89
334	1	700203829H1	SATMON003	g450548	BLASTN	652	1e-45	87
335	1	700153718H1	SATMON007	g167961	BLASTN	656	1e-45	91
336	1	700050841H1	SATMON003	g450548	BLASTN	571	1e-44	86
337	1	700268037H1	SATMON017	g2305013	BLASTN	636	1e-44	86
338	1	700153630H1	SATMON007	g1778820	BLASTN	637	1e-44	82
339	1	700475317H1	SATMON025	g450548	BLASTN	530	1e-43	87
340	1	701163127H1	SATMONN04	g960356	BLASTN	626	1e-43	88
341	1	700203688H1	SATMON003	g960356	BLASTN	627	1e-43	89
342	1	700049893H1	SATMON003	g1778820	BLASTN	506	1e-42	90
343	1	700449155H1	SATMON028	g1778820	BLASTN	443	1e-41	85
344	1	701183780H1	SATMONN06	g450548	BLASTN	558	1e-41	86
345	1	700242162H1	SATMON010	g1778820	BLASTN	600	1e-41	90
346	1	700466994H1	SATMON025	g450548	BLASTN	604	1e-41	91
347	1	700259823H1	SATMON017	g450548	BLASTN	607	1e-41	83
348	1	700346242H1	SATMON021	g450548	BLASTN	608	1e-41	86
349	1	700156395H1	SATMON007	g1778820	BLASTN	609	1e-41	90
350	1	700236835H1	SATMON010	g1778820	BLASTN	335	1e-40	81
351	1	700172385H1	SATMON013	g1778820	BLASTN	397	1e-40	87
352	1	700210466H1	SATMON016	g1778820	BLASTN	586	1e-40	81
353	1	700257303H1	SATMON017	g1778820	BLASTN	589	1e-40	81
354	1	LIB3067-027-Q1-K1-G1	LIB3067	g1778820	BLASTN	623	1e-40	87
355	1	LIB3066-025-Q1-K1-D1	LIB3066	g450548	BLASTN	524	1e-39	85
356	1	700106853H1	SATMON010	g450548	BLASTN	580	1e-39	86
357	1	700160540H1	SATMON012	g960356	BLASTN	581	1e-39	88
358	1	700157780H1	SATMON012	g960356	BLASTN	581	1e-39	88
359	1	700149801H1	SATMON007	g450548	BLASTN	565	1e-38	86
360	1	700353243H1	SATMON024	g450548	BLASTN	570	1e-38	86
361	1	700166171H1	SATMON013	g1778820	BLASTN	254	1e-37	79
362	1	700142509H1	SATMON012	g960356	BLASTN	556	1e-37	88
363	1	700242131H1	SATMON010	g450548	BLASTN	560	1e-37	85
364	1	700455643H1	SATMON029	g450548	BLASTN	539	1e-36	86
365	1	700150248H1	SATMON007	g1778820	BLASTN	547	1e-36	87
366	1	700208549H1	SATMON016	g450548	BLASTN	559	1e-36	88
367	1	700027193H1	SATMON003	g450548	BLASTN	529	1e-35	86
368	1	700221390H1	SATMON011	g450548	BLASTN	530	1e-35	85
369	1	700455647H1	SATMON029	g450548	BLASTN	531	1e-35	85
370	1	700260103H1	SATMON017	g1778820	BLASTN	531	1e-35	80
371	1	700167344H1	SATMON013	g1778820	BLASTN	536	1e-35	88
372	1	700089913H1	SATMON011	g960356	BLASTN	546	1e-35	88

373	1	700570573H1	SATMON030	g450548	BLASTN	300	1e-34	89
374	1	700169889H1	SATMON013	g1778820	BLASTN	519	1e-34	89
375	1	700262857H1	SATMON017	g1778820	BLASTN	521	1e-34	87
376	1	700142644H2	SATMON013	g1778820	BLASTN	522	1e-34	87
377	1	700224417H1	SATMON011	g450548	BLASTN	522	1e-34	91
378	1	700073882H1	SATMON007	g450548	BLASTN	531	1e-34	87
379	1	700085803H1	SATMON011	g450548	BLASTN	338	1e-33	89
380	1	700162323H1	SATMON012	g1778820	BLASTN	513	1e-33	86
381	1	700468306H1	SATMON025	g450548	BLASTN	519	1e-33	89
382	1	700443224H2	SATMON026	g450548	BLASTN	275	1e-32	83
383	1	LIB3066-054-Q1-K1-E3	LIB3066	g450548	BLASTN	495	1e-32	87
384	1	700211827H1	SATMON016	g1778820	BLASTN	489	1e-31	80
385	1	700048741H1	SATMON003	g450548	BLASTN	500	1e-31	88
386	1	700613620H1	SATMON033	g1778820	BLASTN	385	1e-30	88
387	1	700029203H1	SATMON003	g1778820	BLASTN	461	1e-29	84
388	1	700378431H1	SATMON020	g450548	BLASTN	466	1e-29	89
389	1	700455641H1	SATMON029	g450548	BLASTN	472	1e-29	85
390	1	700447867H1	SATMON027	g960356	BLASTN	473	1e-29	88
391	1	700447511H1	SATMON027	g450548	BLASTN	474	1e-29	88
392	1	700025851H1	SATMON003	g450548	BLASTN	479	1e-29	88
393	1	LIB3066-024-Q1-K1-H4	LIB3066	g1778820	BLASTN	481	1e-29	81
394	1	LIB143-025-Q1-E1-C4	LIB143	g450549	BLASTX	64	1e-28	70
395	1	700242282H1	SATMON010	g1778820	BLASTN	280	1e-28	85
396	1	700087244H1	SATMON011	g450548	BLASTN	464	1e-28	88
397	1	700458127H1	SATMON029	g450548	BLASTN	238	1e-27	82
398	1	700025767H1	SATMON003	g1778820	BLASTN	438	1e-26	86
399	1	700235401H1	SATMON010	g450548	BLASTN	442	1e-26	88
400	1	700029457H1	SATMON003	g450548	BLASTN	446	1e-26	89
401	1	700266174H1	SATMON017	g450548	BLASTN	447	1e-26	89
402	1	700349254H1	SATMON023	g1778820	BLASTN	315	1e-25	85
403	1	LIB3068-041-Q1-K1-H6	LIB3068	g450548	BLASTN	438	1e-25	86
404	1	700092889H1	SATMON008	g1778820	BLASTN	397	1e-24	92
405	1	700049044H1	SATMON003	g1778820	BLASTN	425	1e-24	90
406	1	700202710H1	SATMON003	g960357	BLASTX	114	1e-19	97
407	1	700155117H1	SATMON007	g450548	BLASTN	314	1e-19	90
408	1	700449619H1	SATMON028	g1778820	BLASTN	341	1e-19	89
409	1	700150336H1	SATMON007	g1778820	BLASTN	343	1e-19	87
410	1	700166223H1	SATMON013	g960357	BLASTX	181	1e-18	97
411	1	700153796H1	SATMON007	g2305013	BLASTN	300	1e-16	82
412	1	700053266H1	SATMON008	g450548	BLASTN	292	1e-15	83
413	1	700405227H1	SATMON028	g450548	BLASTN	313	1e-15	90
414	1	700397410H1	SATMONN01	g17262	BLASTX	147	1e-14	96
415	1	700211524H1	SATMON016	g1033190	BLASTX	153	1e-14	100
416	1	700281415H2	SATMON019	g2315140	BLASTX	139	1e-13	89
417	1	700429873H1	SATMONN01	g16961	BLASTX	133	1e-12	94
418	1	700239660H1	SATMON010	g450548	BLASTN	245	1e-12	86
419	1	700213596H1	SATMON016	g450548	BLASTN	258	1e-12	95
420	1	700152367H1	SATMON007	g450548	BLASTN	273	1e-12	88
421	1	700452014H1	SATMON028	g17262	BLASTX	76	1e-11	72
422	1	700357106H1	SATMON024	g1724104	BLASTX	132	1e-11	100
423	1	700468611H1	SATMON025	g450549	BLASTX	93	1e-10	93
424	1	700213526H1	SATMON016	g450549	BLASTX	127	1e-10	96
425	1	700267065H1	SATMON017	g450549	BLASTX	130	1e-10	96
426	1	700152044H1	SATMON007	g450549	BLASTX	88	1e-8	93

427	1	700159090H1	SATMON012	g169665	BLASTX	113	1e-8	81
428	1	700266734H1	SATMON017	g450549	BLASTX	119	1e-8	96
429	1	700405367H1	SATMON029	g1778820	BLASTN	231	1e-8	65
1635	-700555532	700555532H1	SOYMON001	g429103	BLASTN	920	1e-67	84
1636	-700649594	700649594H1	SOYMON003	g609559	BLASTX	186	1e-23	85
1637	-700750590	700750590H1	SOYMON014	g609224	BLASTN	363	1e-40	79
1638	-700755802	700755802H1	SOYMON014	g609224	BLASTN	479	1e-43	74
1639	-700869211	700869211H1	SOYMON016	g169665	BLASTX	146	1e-13	92
1640	-700891960	700891960H1	SOYMON024	g726031	BLASTN	589	1e-56	82
1641	-700900377	700900377H1	SOYMON027	g1655577	BLASTN	235	1e-8	78
1642	-700902427	700902427H1	SOYMON027	g1655576	BLASTX	151	1e-13	76
1643	-700941686	700941686H1	SOYMON024	g497899	BLASTN	442	1e-26	89
1644	-700952418	700952418H1	SOYMON022	g726030	BLASTX	146	1e-17	83
1645	-700979651	700979651H2	SOYMON009	g1655579	BLASTN	1006	1e-75	84
1646	-700982809	700982809H1	SOYMON009	g1655579	BLASTN	945	1e-69	82
1647	-700982867	700982867H1	SOYMON009	g1127582	BLASTN	868	1e-63	78
1648	-701056884	701056884H1	SOYMON032	g609556	BLASTN	726	1e-51	84
1649	-701117318	701117318H1	SOYMON037	g609224	BLASTN	451	1e-37	80
1650	-701118224	701118224H1	SOYMON037	g2305013	BLASTN	285	1e-19	72
1651	-701121264	701121264H1	SOYMON037	g166873	BLASTN	238	1e-8	82
1652	-701122908	701122908H1	SOYMON037	g16508	BLASTN	444	1e-26	83
1653	-701128589	701128589H1	SOYMON037	g16508	BLASTN	539	1e-36	90
1654	-GM12798	LIB3049-039-Q1-E1-F2	LIB3049	g16508	BLASTN	578	1e-37	73
1655	-GM14331	LIB3049-055-Q1-E1-F5	LIB3049	g167961	BLASTN	497	1e-30	62
1656	-GM30881	LIB3050-005-Q1-K1-G1	LIB3050	g1655577	BLASTN	543	1e-34	82
1657	-GM30911	LIB3050-005-Q1-K1-B8	LIB3050	g1655577	BLASTN	387	1e-26	71
1658	-GM33921	LIB3051-028-Q1-K1-A9	LIB3051	g16508	BLASTN	338	1e-32	73
1659	12644	701131794H1	SOYMON038	g429107	BLASTN	877	1e-64	84
1660	12644	701142515H1	SOYMON038	g429107	BLASTN	871	1e-63	84
1661	12644	700888494H1	SOYMON024	g429107	BLASTN	662	1e-46	83
1662	16	LIB3030-009-Q1-B1-C1	LIB3030	g429105	BLASTN	1439	1e-119	84
1663	16	LIB3051-106-Q1-K1-B5	LIB3051	g609224	BLASTN	1516	1e-117	86
1664	16	LIB3050-023-Q1-K1-A12	LIB3050	g1724103	BLASTN	1388	1e-106	83
1665	16	LIB3028-003-Q1-B1-G11	LIB3028	g609224	BLASTN	1313	1e-100	87
1666	16	LIB3054-010-Q1-N1-E2	LIB3054	g609224	BLASTN	920	1e-95	87
1667	16	700651294H1	SOYMON003	g609224	BLASTN	672	1e-94	86
1668	16	LIB3027-007-Q1-B1-G3	LIB3027	g16508	BLASTN	891	1e-93	83
1669	16	LIB3053-013-Q1-N1-H9	LIB3053	g609224	BLASTN	996	1e-93	87
1670	16	LIB3051-061-Q1-K1-C7	LIB3051	g16508	BLASTN	1195	1e-93	86
1671	16	LIB3065-005-Q1-N1-A6	LIB3065	g609224	BLASTN	707	1e-91	78
1672	16	LIB3050-008-Q1-E1-E3	LIB3050	g609224	BLASTN	1102	1e-87	87
1673	16	LIB3051-011-Q1-E1-B2	LIB3051	g16508	BLASTN	1153	1e-87	82
1674	16	LIB3030-010-Q1-B1-F8	LIB3030	g609224	BLASTN	988	1e-86	83
1675	16	700652104H1	SOYMON003	g1655577	BLASTN	990	1e-86	83
1676	16	701205279H1	SOYMON035	g609556	BLASTN	1125	1e-85	86
1677	16	700662183H1	SOYMON005	g609224	BLASTN	678	1e-83	84
1678	16	LIB3051-039-Q1-K1-F5	LIB3051	g169664	BLASTN	1104	1e-83	86
1679	16	700557616H1	SOYMON001	g609556	BLASTN	1111	1e-83	86
1680	16	LIB3030-002-Q1-B1-C6	LIB3030	g16508	BLASTN	1113	1e-83	83
1681	16	700865235H1	SOYMON016	g1724103	BLASTN	1090	1e-82	84
1682	16	700563340H1	SOYMON002	g609224	BLASTN	911	1e-80	86
1683	16	LIB3040-044-Q1-E1-D7	LIB3040	g166873	BLASTN	1052	1e-80	82
1684	16	LIB3040-060-Q1-E1-D9	LIB3040	g609224	BLASTN	1071	1e-80	84
1685	16	LIB3049-001-Q1-E1-F12	LIB3049	g16508	BLASTN	1074	1e-80	84

1686	16	LIB3028-006-Q1-B1-F1	LIB3028	g16508	BLASTN	857	1e-79	83
1687	16	LIB3049-033-Q1-E1-G5	LIB3049	g2315139	BLASTN	933	1e-79	81
1688	16	700978240H1	SOYMON009	g609224	BLASTN	984	1e-79	88
1689	16	700980802H1	SOYMON009	g862999	BLASTN	1060	1e-79	85
1690	16	700755908H1	SOYMON014	g1724103	BLASTN	1062	1e-79	88
1691	16	700562226H1	SOYMON002	g1724103	BLASTN	1065	1e-79	84
1692	16	701119101H1	SOYMON037	g609224	BLASTN	1048	1e-78	86
1693	16	700646291H1	SOYMON012	g1655577	BLASTN	1049	1e-78	86
1694	16	LIB3050-022-Q1-K1-B9	LIB3050	g16508	BLASTN	1049	1e-78	83
1695	16	LIB3028-030-Q1-B1-F8	LIB3028	g16508	BLASTN	1053	1e-78	83
1696	16	701143128H1	SOYMON038	g609556	BLASTN	737	1e-77	86
1697	16	LIB3040-041-Q1-E1-D10	LIB3040	g166873	BLASTN	861	1e-77	81
1698	16	700756363H1	SOYMON014	g609556	BLASTN	1031	1e-77	88
1699	16	700729963H1	SOYMON009	g1724103	BLASTN	1036	1e-77	88
1700	16	701063046H1	SOYMON033	g609224	BLASTN	1037	1e-77	86
1701	16	LIB3030-005-Q1-B1-G2	LIB3030	g609224	BLASTN	1038	1e-77	84
1702	16	700564331H1	SOYMON002	g609556	BLASTN	1039	1e-77	84
1703	16	700562958H1	SOYMON002	g1724103	BLASTN	1040	1e-77	88
1704	16	LIB3039-014-Q1-E1-F7	LIB3039	g16508	BLASTN	569	1e-76	84
1705	16	700753632H1	SOYMON014	g497899	BLASTN	668	1e-76	83
1706	16	LIB3049-048-Q1-E1-F2	LIB3049	g16508	BLASTN	722	1e-76	83
1707	16	700648911H1	SOYMON003	g1655577	BLASTN	983	1e-76	83
1708	16	LIB3040-027-Q1-E1-H3	LIB3040	g166873	BLASTN	1003	1e-76	81
1709	16	700664905H1	SOYMON005	g609556	BLASTN	1020	1e-76	86
1710	16	701133404H1	SOYMON038	g1724103	BLASTN	1023	1e-76	85
1711	16	701208780H1	SOYMON035	g1655577	BLASTN	1025	1e-76	85
1712	16	700902279H1	SOYMON027	g169664	BLASTN	1026	1e-76	88
1713	16	LIB3040-048-Q1-E1-G10	LIB3040	g16508	BLASTN	1030	1e-76	83
1714	16	LIB3040-028-Q1-E1-A4	LIB3040	g16508	BLASTN	979	1e-75	84
1715	16	700807586H1	SOYMON016	g609224	BLASTN	1006	1e-75	86
1716	16	700755486H1	SOYMON014	g609224	BLASTN	1006	1e-75	87
1717	16	700724920H1	SOYMON009	g609224	BLASTN	1009	1e-75	87
1718	16	701007494H2	SOYMON019	g1724103	BLASTN	1013	1e-75	85
1719	16	700568310H1	SOYMON002	g497899	BLASTN	834	1e-74	83
1720	16	701208819H1	SOYMON035	g609224	BLASTN	857	1e-74	87
1721	16	700985084H1	SOYMON009	g609224	BLASTN	872	1e-74	85
1722	16	701013074H1	SOYMON019	g726031	BLASTN	894	1e-74	88
1723	16	700650843H1	SOYMON003	g609224	BLASTN	924	1e-74	86
1724	16	700646037H1	SOYMON011	g609556	BLASTN	930	1e-74	84
1725	16	LIB3040-039-Q1-E1-H9	LIB3040	g166873	BLASTN	973	1e-74	80
1726	16	700847231H1	SOYMON021	g726031	BLASTN	999	1e-74	85
1727	16	700792293H1	SOYMON011	g609224	BLASTN	999	1e-74	86
1728	16	701109644H1	SOYMON036	g609556	BLASTN	1004	1e-74	86
1729	16	701122929H1	SOYMON037	g1724103	BLASTN	459	1e-73	87
1730	16	700661491H1	SOYMON005	g16508	BLASTN	540	1e-73	90
1731	16	701120070H1	SOYMON037	g609224	BLASTN	786	1e-73	87
1732	16	700898895H1	SOYMON027	g609556	BLASTN	820	1e-73	88
1733	16	701096959H1	SOYMON028	g429105	BLASTN	839	1e-73	82
1734	16	700848356H1	SOYMON021	g497899	BLASTN	985	1e-73	85
1735	16	700864876H1	SOYMON016	g1724103	BLASTN	985	1e-73	88
1736	16	700868456H1	SOYMON016	g609224	BLASTN	987	1e-73	86
1737	16	701210488H1	SOYMON035	g1655577	BLASTN	988	1e-73	83
1738	16	700747764H1	SOYMON013	g609224	BLASTN	822	1e-72	87
1739	16	701063311H1	SOYMON033	g1655577	BLASTN	971	1e-72	86

1740	16	700868625H1	SOYMON016	g1724103	BLASTN	973	1e-72	85
1741	16	700992344H1	SOYMON011	g726031	BLASTN	973	1e-72	85
1742	16	701012719H1	SOYMON019	g1724103	BLASTN	973	1e-72	85
1743	16	700676769H1	SOYMON007	g609224	BLASTN	973	1e-72	87
1744	16	700946235H1	SOYMON024	g609224	BLASTN	975	1e-72	85
1745	16	700891218H1	SOYMON024	g1724103	BLASTN	975	1e-72	84
1746	16	700724907H1	SOYMON009	g609556	BLASTN	977	1e-72	84
1747	16	700833549H1	SOYMON019	g1655577	BLASTN	979	1e-72	85
1748	16	700942105H1	SOYMON024	g726031	BLASTN	980	1e-72	84
1749	16	700564290H1	SOYMON002	g726031	BLASTN	530	1e-71	84
1750	16	700891233H1	SOYMON024	g1724103	BLASTN	746	1e-71	86
1751	16	LIB3028-025-Q1-B1-B2	LIB3028	g609224	BLASTN	870	1e-71	85
1752	16	701120896H1	SOYMON037	g429105	BLASTN	959	1e-71	82
1753	16	LIB3051-027-Q1-K1-A9	LIB3051	g609224	BLASTN	962	1e-71	83
1754	16	701050696H1	SOYMON032	g609556	BLASTN	965	1e-71	86
1755	16	700653619H1	SOYMON003	g609224	BLASTN	966	1e-71	86
1756	16	701047994H1	SOYMON032	g1724103	BLASTN	967	1e-71	85
1757	16	701123056H1	SOYMON037	g1724103	BLASTN	968	1e-71	85
1758	16	700983479H1	SOYMON009	g726031	BLASTN	653	1e-70	85
1759	16	701063733H1	SOYMON034	g1655577	BLASTN	850	1e-70	85
1760	16	700738366H1	SOYMON012	g726031	BLASTN	946	1e-70	85
1761	16	700866319H1	SOYMON016	g1655575	BLASTN	947	1e-70	85
1762	16	700789013H2	SOYMON011	g1655577	BLASTN	948	1e-70	85
1763	16	700896080H1	SOYMON027	g609224	BLASTN	949	1e-70	87
1764	16	LIB3039-021-Q1-E1-F12	LIB3039	g16508	BLASTN	950	1e-70	83
1765	16	700898284H1	SOYMON027	g429105	BLASTN	950	1e-70	86
1766	16	700901743H1	SOYMON027	g609224	BLASTN	950	1e-70	86
1767	16	700831048H1	SOYMON019	g429105	BLASTN	951	1e-70	85
1768	16	701038107H1	SOYMON029	g726031	BLASTN	952	1e-70	87
1769	16	700559703H1	SOYMON001	g726031	BLASTN	954	1e-70	88
1770	16	700848817H1	SOYMON021	g609224	BLASTN	954	1e-70	84
1771	16	700896032H1	SOYMON027	g609224	BLASTN	956	1e-70	87
1772	16	700944764H1	SOYMON024	g16508	BLASTN	567	1e-69	85
1773	16	701011015H1	SOYMON019	g1724103	BLASTN	647	1e-69	81
1774	16	701125662H1	SOYMON037	g609224	BLASTN	751	1e-69	87
1775	16	701046895H1	SOYMON032	g16508	BLASTN	795	1e-69	83
1776	16	701012632H1	SOYMON019	g1655577	BLASTN	800	1e-69	85
1777	16	701005244H1	SOYMON019	g1724103	BLASTN	804	1e-69	82
1778	16	LIB3050-023-Q1-K1-H10	LIB3050	g609224	BLASTN	899	1e-69	83
1779	16	700892558H1	SOYMON024	g1655575	BLASTN	936	1e-69	85
1780	16	700988779H1	SOYMON011	g16508	BLASTN	937	1e-69	82
1781	16	701203923H2	SOYMON035	g429105	BLASTN	938	1e-69	86
1782	16	701010231H2	SOYMON019	g1724103	BLASTN	938	1e-69	83
1783	16	701041790H1	SOYMON029	g450548	BLASTN	939	1e-69	84
1784	16	700967887H1	SOYMON033	g1724103	BLASTN	940	1e-69	87
1785	16	701123361H1	SOYMON037	g16508	BLASTN	941	1e-69	84
1786	16	701123154H1	SOYMON037	g1724103	BLASTN	942	1e-69	86
1787	16	701045767H1	SOYMON032	g726031	BLASTN	942	1e-69	85
1788	16	700983288H1	SOYMON009	g609224	BLASTN	945	1e-69	83
1789	16	700653053H1	SOYMON003	g609224	BLASTN	945	1e-69	86
1790	16	701044226H1	SOYMON032	g1655577	BLASTN	486	1e-68	83
1791	16	700969927H1	SOYMON005	g497899	BLASTN	750	1e-68	85
1792	16	700547956H1	SOYMON001	g609224	BLASTN	779	1e-68	87
1793	16	LIB3049-048-Q1-E1-E4	LIB3049	g609224	BLASTN	827	1e-68	83

1794	16	701140780H1	SOYMON038	g1655577	BLASTN	922	1e-68	85
1795	16	700849166H1	SOYMON021	g1724103	BLASTN	923	1e-68	84
1796	16	700891945H1	SOYMON024	g609556	BLASTN	925	1e-68	87
1797	16	700658051H1	SOYMON004	g429105	BLASTN	925	1e-68	83
1798	16	700942415H1	SOYMON024	g1655575	BLASTN	928	1e-68	84
1799	16	701041890H1	SOYMON029	g1724103	BLASTN	930	1e-68	82
1800	16	LIB3028-006-Q1-B1-H12	LIB3028	g16508	BLASTN	931	1e-68	81
1801	16	700967039H1	SOYMON029	g429105	BLASTN	931	1e-68	85
1802	16	700836178H1	SOYMON019	g1724103	BLASTN	933	1e-68	85
1803	16	700897558H1	SOYMON027	g16508	BLASTN	737	1e-67	85
1804	16	LIB3050-004-Q1-E1-A2	LIB3050	g609224	BLASTN	796	1e-67	80
1805	16	700730236H1	SOYMON009	g726031	BLASTN	816	1e-67	84
1806	16	700833936H1	SOYMON019	g1724103	BLASTN	915	1e-67	84
1807	16	700897552H1	SOYMON027	g1655577	BLASTN	916	1e-67	84
1808	16	700945440H1	SOYMON024	g609556	BLASTN	917	1e-67	84
1809	16	700961368H1	SOYMON022	g169664	BLASTN	918	1e-67	88
1810	16	700789702H1	SOYMON011	g609224	BLASTN	921	1e-67	86
1811	16	700786541H1	SOYMON011	g429105	BLASTN	513	1e-66	84
1812	16	700987282H1	SOYMON009	g16508	BLASTN	523	1e-66	87
1813	16	700661002H1	SOYMON005	g2305013	BLASTN	836	1e-66	81
1814	16	701148312H1	SOYMON031	g862999	BLASTN	899	1e-66	84
1815	16	700738822H1	SOYMON012	g1655577	BLASTN	899	1e-66	85
1816	16	700940996H1	SOYMON024	g609556	BLASTN	901	1e-66	86
1817	16	700749195H1	SOYMON013	g609556	BLASTN	903	1e-66	81
1818	16	700893941H1	SOYMON024	g429105	BLASTN	903	1e-66	88
1819	16	700892888H1	SOYMON024	g609556	BLASTN	906	1e-66	86
1820	16	700901481H1	SOYMON027	g169664	BLASTN	638	1e-65	86
1821	16	700945269H1	SOYMON024	g169664	BLASTN	688	1e-65	86
1822	16	700746876H1	SOYMON013	g609556	BLASTN	740	1e-65	85
1823	16	700755043H1	SOYMON014	g609556	BLASTN	760	1e-65	87
1824	16	701097166H1	SOYMON028	g1655577	BLASTN	781	1e-65	82
1825	16	701129484H1	SOYMON037	g16508	BLASTN	898	1e-65	82
1826	16	700651014H1	SOYMON003	g167961	BLASTN	464	1e-64	81
1827	16	701134363H1	SOYMON038	g726031	BLASTN	687	1e-64	84
1828	16	701124677H1	SOYMON037	g726031	BLASTN	876	1e-64	85
1829	16	701000359H1	SOYMON018	g1724103	BLASTN	877	1e-64	87
1830	16	701139375H1	SOYMON038	g1724103	BLASTN	883	1e-64	84
1831	16	700832784H1	SOYMON019	g609224	BLASTN	883	1e-64	89
1832	16	700980227H1	SOYMON009	g1724103	BLASTN	884	1e-64	84
1833	16	700943177H1	SOYMON024	g1655577	BLASTN	885	1e-64	85
1834	16	700844446H1	SOYMON021	g2315139	BLASTN	355	1e-63	84
1835	16	700836453H1	SOYMON020	g862999	BLASTN	494	1e-63	85
1836	16	700983012H1	SOYMON009	g16508	BLASTN	756	1e-63	83
1837	16	700795805H1	SOYMON017	g1655577	BLASTN	833	1e-63	85
1838	16	701213663H1	SOYMON035	g1724103	BLASTN	862	1e-63	84
1839	16	700868366H1	SOYMON016	g167961	BLASTN	864	1e-63	83
1840	16	701134377H1	SOYMON038	g2305013	BLASTN	865	1e-63	79
1841	16	LIB3049-007-Q1-E1-C9	LIB3049	g16508	BLASTN	867	1e-63	79
1842	16	700944577H1	SOYMON024	g862999	BLASTN	869	1e-63	85
1843	16	700992289H1	SOYMON011	g16508	BLASTN	869	1e-63	84
1844	16	700891612H1	SOYMON024	g609556	BLASTN	872	1e-63	86
1845	16	700738277H1	SOYMON012	g609224	BLASTN	463	1e-62	85
1846	16	700895571H1	SOYMON027	g609224	BLASTN	562	1e-62	88
1847	16	LIB3049-008-Q1-E1-B3	LIB3049	g16508	BLASTN	853	1e-62	77

1848	16	LIB3027-010-Q1-B1-E12	LIB3027	g609224	BLASTN	854	1e-62	82
1849	16	701129389H1	SOYMON037	g16508	BLASTN	854	1e-62	83
1850	16	701045542H1	SOYMON032	g429105	BLASTN	855	1e-62	86
1851	16	700969901H1	SOYMON005	g726031	BLASTN	856	1e-62	84
1852	16	700984664H1	SOYMON009	g1724103	BLASTN	856	1e-62	81
1853	16	700561352H1	SOYMON002	g609224	BLASTN	858	1e-62	85
1854	16	701138828H1	SOYMON038	g16508	BLASTN	858	1e-62	84
1855	16	700845962H1	SOYMON021	g1655577	BLASTN	861	1e-62	87
1856	16	700896147H1	SOYMON027	g16508	BLASTN	336	1e-61	82
1857	16	701137929H1	SOYMON038	g1655577	BLASTN	502	1e-61	84
1858	16	LIB3040-032-Q1-E1-B8	LIB3040	g16508	BLASTN	521	1e-61	82
1859	16	701009537H1	SOYMON019	g726031	BLASTN	545	1e-61	86
1860	16	LIB3049-031-Q1-E1-E4	LIB3049	g609224	BLASTN	677	1e-61	82
1861	16	LIB3049-031-Q1-E1-C7	LIB3049	g167961	BLASTN	696	1e-61	82
1862	16	700891843H1	SOYMON024	g1655577	BLASTN	737	1e-61	84
1863	16	700561231H1	SOYMON002	g16508	BLASTN	839	1e-61	82
1864	16	700548238H1	SOYMON002	g429105	BLASTN	843	1e-61	85
1865	16	700901018H1	SOYMON027	g2305013	BLASTN	845	1e-61	82
1866	16	701134413H1	SOYMON038	g2305013	BLASTN	848	1e-61	82
1867	16	700653524H1	SOYMON003	g609224	BLASTN	499	1e-60	85
1868	16	LIB3049-017-Q1-E1-G8	LIB3049	g16508	BLASTN	514	1e-60	82
1869	16	701121077H1	SOYMON037	g16508	BLASTN	671	1e-60	84
1870	16	LIB3056-013-Q1-N1-A9	LIB3056	g609224	BLASTN	784	1e-60	86
1871	16	700943524H1	SOYMON024	g16508	BLASTN	831	1e-60	85
1872	16	700952889H1	SOYMON022	g429103	BLASTN	835	1e-60	84
1873	16	700730632H1	SOYMON009	g1655577	BLASTN	431	1e-59	82
1874	16	700649136H1	SOYMON003	g609224	BLASTN	486	1e-59	84
1875	16	700895591H1	SOYMON027	g609556	BLASTN	492	1e-59	87
1876	16	701009829H1	SOYMON019	g429103	BLASTN	572	1e-59	80
1877	16	LIB3039-011-Q1-E1-C11	LIB3039	g16508	BLASTN	619	1e-59	83
1878	16	LIB3040-055-Q1-E1-C4	LIB3040	g16508	BLASTN	622	1e-59	82
1879	16	701123571H1	SOYMON037	g2305013	BLASTN	682	1e-59	81
1880	16	LIB3049-004-Q1-E1-E5	LIB3049	g167961	BLASTN	771	1e-59	83
1881	16	701002239H1	SOYMON018	g609224	BLASTN	782	1e-59	86
1882	16	700971088H1	SOYMON005	g1724103	BLASTN	793	1e-59	81
1883	16	700864624H1	SOYMON016	g167961	BLASTN	817	1e-59	83
1884	16	700863534H1	SOYMON027	g16508	BLASTN	818	1e-59	86
1885	16	700749489H1	SOYMON013	g16508	BLASTN	823	1e-59	86
1886	16	700730689H1	SOYMON009	g16508	BLASTN	825	1e-59	83
1887	16	LIB3049-050-Q1-E1-A11	LIB3049	g16508	BLASTN	831	1e-59	83
1888	16	700850803H1	SOYMON023	g1655577	BLASTN	511	1e-58	83
1889	16	700992317H1	SOYMON011	g1655577	BLASTN	520	1e-58	79
1890	16	701119129H1	SOYMON037	g16508	BLASTN	553	1e-58	83
1891	16	700657623H1	SOYMON004	g1724103	BLASTN	600	1e-58	83
1892	16	LIB3049-015-Q1-E1-F8	LIB3049	g16508	BLASTN	674	1e-58	79
1893	16	701007027H1	SOYMON019	g16508	BLASTN	804	1e-58	81
1894	16	701120820H1	SOYMON037	g609224	BLASTN	807	1e-58	85
1895	16	700654317H1	SOYMON004	g1655577	BLASTN	811	1e-58	84
1896	16	700889071H1	SOYMON024	g497899	BLASTN	812	1e-58	83
1897	16	701010676H1	SOYMON019	g609224	BLASTN	813	1e-58	85
1898	16	701099590H1	SOYMON028	g1655577	BLASTN	486	1e-57	82
1899	16	700649684H1	SOYMON003	g16508	BLASTN	540	1e-57	82
1900	16	700994107H1	SOYMON011	g16508	BLASTN	567	1e-57	80
1901	16	700898629H1	SOYMON027	g16508	BLASTN	687	1e-57	82

1902	16	700902333H1	SOYMON027	g609224	BLASTN	700	1e-57	82
1903	16	LIB3039-017-Q1-E1-D9	LIB3039	g16508	BLASTN	703	1e-57	81
1904	16	LIB3040-026-Q1-E1-A4	LIB3040	g16508	BLASTN	709	1e-57	83
1905	16	701130101H1	SOYMON037	g1724103	BLASTN	791	1e-57	88
1906	16	700902482H1	SOYMON027	g169664	BLASTN	797	1e-57	81
1907	16	700730789H1	SOYMON009	g16508	BLASTN	798	1e-57	82
1908	16	700868670H1	SOYMON016	g16508	BLASTN	800	1e-57	83
1909	16	LIB3029-011-Q1-B1-D1	LIB3029	g609224	BLASTN	800	1e-57	82
1910	16	701119278H1	SOYMON037	g609224	BLASTN	801	1e-57	83
1911	16	700747731H1	SOYMON013	g16508	BLASTN	801	1e-57	86
1912	16	LIB3049-017-Q1-E1-A11	LIB3049	g16508	BLASTN	811	1e-57	80
1913	16	700890428H1	SOYMON024	g609224	BLASTN	482	1e-56	83
1914	16	700562326H1	SOYMON002	g609224	BLASTN	778	1e-56	82
1915	16	700567740H1	SOYMON002	g609224	BLASTN	781	1e-56	85
1916	16	701061514H1	SOYMON033	g1724103	BLASTN	784	1e-56	86
1917	16	701135670H1	SOYMON038	g429105	BLASTN	785	1e-56	81
1918	16	701139657H1	SOYMON038	g609224	BLASTN	786	1e-56	85
1919	16	701123371H1	SOYMON037	g16508	BLASTN	788	1e-56	86
1920	16	700838744H1	SOYMON020	g16508	BLASTN	789	1e-56	82
1921	16	701070458H1	SOYMON034	g1655577	BLASTN	457	1e-55	78
1922	16	701003437H1	SOYMON019	g429105	BLASTN	474	1e-55	83
1923	16	700835976H1	SOYMON019	g16508	BLASTN	562	1e-55	84
1924	16	700894535H1	SOYMON024	g16508	BLASTN	570	1e-55	86
1925	16	700752755H1	SOYMON014	g1655577	BLASTN	690	1e-55	83
1926	16	LIB3049-032-Q1-E1-C9	LIB3049	g16508	BLASTN	700	1e-55	83
1927	16	LIB3040-030-Q1-E1-B5	LIB3040	g16508	BLASTN	709	1e-55	84
1928	16	701136935H1	SOYMON038	g609224	BLASTN	766	1e-55	85
1929	16	700682088H1	SOYMON008	g169664	BLASTN	767	1e-55	90
1930	16	700682188H1	SOYMON008	g169664	BLASTN	767	1e-55	90
1931	16	701068649H1	SOYMON034	g16508	BLASTN	770	1e-55	83
1932	16	700726623H1	SOYMON009	g16508	BLASTN	771	1e-55	85
1933	16	700751129H1	SOYMON014	g16508	BLASTN	772	1e-55	86
1934	16	700945234H1	SOYMON024	g16508	BLASTN	773	1e-55	83
1935	16	701133507H2	SOYMON038	g609224	BLASTN	776	1e-55	85
1936	16	700902459H1	SOYMON027	g726031	BLASTN	777	1e-55	84
1937	16	700986624H1	SOYMON009	g16508	BLASTN	612	1e-54	83
1938	16	701097020H1	SOYMON028	g609224	BLASTN	615	1e-54	84
1939	16	701131409H1	SOYMON038	g16508	BLASTN	755	1e-54	91
1940	16	700750123H1	SOYMON013	g726031	BLASTN	756	1e-54	86
1941	16	701040251H1	SOYMON029	g16508	BLASTN	756	1e-54	85
1942	16	700732290H1	SOYMON010	g169664	BLASTN	758	1e-54	90
1943	16	701117458H1	SOYMON037	g609224	BLASTN	759	1e-54	82
1944	16	701118709H1	SOYMON037	g16508	BLASTN	760	1e-54	91
1945	16	701012834H1	SOYMON019	g16508	BLASTN	760	1e-54	91
1946	16	701133316H1	SOYMON038	g16508	BLASTN	760	1e-54	91
1947	16	701129646H1	SOYMON037	g16508	BLASTN	760	1e-54	91
1948	16	700732265H1	SOYMON010	g169664	BLASTN	760	1e-54	90
1949	16	701040796H1	SOYMON029	g1724103	BLASTN	760	1e-54	89
1950	16	700846350H1	SOYMON021	g16508	BLASTN	761	1e-54	86
1951	16	701137005H1	SOYMON038	g16508	BLASTN	761	1e-54	86
1952	16	701046506H1	SOYMON032	g16508	BLASTN	761	1e-54	91
1953	16	700894462H1	SOYMON024	g16508	BLASTN	761	1e-54	86
1954	16	700973847H1	SOYMON005	g16508	BLASTN	766	1e-54	87
1955	16	701128215H1	SOYMON037	g609556	BLASTN	466	1e-53	82

1956	16	700842468H1	SOYMON020	g429105	BLASTN	548	1e-53	86
1957	16	701051552H1	SOYMON032	g609224	BLASTN	744	1e-53	85
1958	16	700944049H1	SOYMON024	g609224	BLASTN	744	1e-53	85
1959	16	701120261H1	SOYMON037	g609224	BLASTN	746	1e-53	84
1960	16	700897524H1	SOYMON027	g609224	BLASTN	751	1e-53	84
1961	16	LIB3049-042-Q1-E1-F7	LIB3049	g450548	BLASTN	761	1e-53	75
1962	16	700896909H1	SOYMON027	g429105	BLASTN	536	1e-52	82
1963	16	700974820H1	SOYMON005	g1724103	BLASTN	582	1e-52	86
1964	16	701143224H1	SOYMON038	g609224	BLASTN	731	1e-52	84
1965	16	701010322H1	SOYMON019	g609224	BLASTN	731	1e-52	85
1966	16	701130510H1	SOYMON038	g609224	BLASTN	732	1e-52	83
1967	16	700724904H1	SOYMON009	g609224	BLASTN	733	1e-52	85
1968	16	701119845H1	SOYMON037	g609224	BLASTN	734	1e-52	85
1969	16	701107871H1	SOYMON036	g16508	BLASTN	737	1e-52	86
1970	16	700983380H1	SOYMON009	g609224	BLASTN	738	1e-52	84
1971	16	700896469H1	SOYMON027	g16508	BLASTN	741	1e-52	86
1972	16	700792178H1	SOYMON011	g16508	BLASTN	742	1e-52	85
1973	16	701099906H1	SOYMON028	g16508	BLASTN	431	1e-51	89
1974	16	701134724H2	SOYMON038	g16508	BLASTN	553	1e-51	85
1975	16	700749712H1	SOYMON013	g16508	BLASTN	689	1e-51	87
1976	16	700982567H1	SOYMON009	g609224	BLASTN	723	1e-51	85
1977	16	701013758H1	SOYMON019	g609224	BLASTN	723	1e-51	85
1978	16	700868508H1	SOYMON016	g609224	BLASTN	723	1e-51	85
1979	16	700749316H1	SOYMON013	g609224	BLASTN	723	1e-51	85
1980	16	701045367H1	SOYMON032	g16508	BLASTN	724	1e-51	91
1981	16	701205494H1	SOYMON035	g609224	BLASTN	724	1e-51	84
1982	16	700556784H1	SOYMON001	g16508	BLASTN	724	1e-51	91
1983	16	701099879H1	SOYMON028	g16508	BLASTN	726	1e-51	80
1984	16	701131671H1	SOYMON038	g609224	BLASTN	728	1e-51	85
1985	16	701011505H1	SOYMON019	g609224	BLASTN	728	1e-51	85
1986	16	701009973H2	SOYMON019	g609224	BLASTN	728	1e-51	85
1987	16	700793520H1	SOYMON017	g609224	BLASTN	728	1e-51	85
1988	16	700753622H1	SOYMON014	g609224	BLASTN	728	1e-51	85
1989	16	700984052H1	SOYMON009	g609224	BLASTN	728	1e-51	83
1990	16	701108521H1	SOYMON036	g609224	BLASTN	728	1e-51	85
1991	16	700957203H1	SOYMON022	g1724103	BLASTN	464	1e-50	86
1992	16	700554120H1	SOYMON001	g609224	BLASTN	528	1e-50	84
1993	16	700555954H1	SOYMON001	g167961	BLASTN	528	1e-50	86
1994	16	701124141H1	SOYMON037	g609224	BLASTN	537	1e-50	85
1995	16	701003232H1	SOYMON019	g16508	BLASTN	544	1e-50	88
1996	16	700653112H1	SOYMON003	g16508	BLASTN	559	1e-50	91
1997	16	701103353H1	SOYMON028	g1655577	BLASTN	581	1e-50	84
1998	16	700562790H1	SOYMON002	g497899	BLASTN	708	1e-50	86
1999	16	701097303H1	SOYMON028	g609224	BLASTN	711	1e-50	84
2000	16	700561195H1	SOYMON002	g609224	BLASTN	712	1e-50	84
2001	16	701121162H1	SOYMON037	g16508	BLASTN	712	1e-50	88
2002	16	700981317H1	SOYMON009	g16508	BLASTN	714	1e-50	89
2003	16	700981595H1	SOYMON009	g16508	BLASTN	716	1e-50	86
2004	16	700994305H1	SOYMON011	g609224	BLASTN	528	1e-49	85
2005	16	701101565H1	SOYMON028	g429105	BLASTN	552	1e-49	82
2006	16	701103456H1	SOYMON028	g429105	BLASTN	617	1e-49	81
2007	16	700993331H1	SOYMON011	g16508	BLASTN	622	1e-49	86
2008	16	LIB3052-011-Q1-N1-B12	LIB3052	g16508	BLASTN	695	1e-49	85
2009	16	701140613H1	SOYMON038	g609224	BLASTN	697	1e-49	85

2010	16	700745426H1	SOYMON013	g16508	BLASTN	697	1e-49	84
2011	16	701046530H1	SOYMON032	g609224	BLASTN	697	1e-49	84
2012	16	701003787H1	SOYMON019	g609224	BLASTN	697	1e-49	85
2013	16	700840830H1	SOYMON020	g1724103	BLASTN	699	1e-49	79
2014	16	700901588H1	SOYMON027	g609224	BLASTN	702	1e-49	85
2015	16	701037824H1	SOYMON029	g497899	BLASTN	702	1e-49	87
2016	16	701131888H1	SOYMON038	g609224	BLASTN	702	1e-49	85
2017	16	701009947H2	SOYMON019	g609224	BLASTN	702	1e-49	85
2018	16	700729216H1	SOYMON009	g497899	BLASTN	702	1e-49	87
2019	16	700831705H1	SOYMON019	g609224	BLASTN	702	1e-49	85
2020	16	700900329H1	SOYMON027	g429105	BLASTN	705	1e-49	88
2021	16	700563946H1	SOYMON002	g16508	BLASTN	705	1e-49	83
2022	16	700808370H1	SOYMON024	g609556	BLASTN	459	1e-48	83
2023	16	LIB3040-001-Q1-E1-H4	LIB3040	g1724103	BLASTN	475	1e-48	76
2024	16	700989482H1	SOYMON011	g16508	BLASTN	498	1e-48	86
2025	16	701001311H1	SOYMON018	g16508	BLASTN	655	1e-48	85
2026	16	700734733H1	SOYMON010	g497899	BLASTN	682	1e-48	87
2027	16	701013070H1	SOYMON019	g497899	BLASTN	682	1e-48	87
2028	16	701120989H1	SOYMON037	g16508	BLASTN	683	1e-48	91
2029	16	LIB3049-025-Q1-E1-B4	LIB3049	g167961	BLASTN	687	1e-48	82
2030	16	700808455H1	SOYMON024	g16508	BLASTN	688	1e-48	87
2031	16	701101319H1	SOYMON028	g16508	BLASTN	688	1e-48	91
2032	16	701037087H1	SOYMON029	g609224	BLASTN	689	1e-48	85
2033	16	701205225H1	SOYMON035	g16508	BLASTN	689	1e-48	84
2034	16	701136807H1	SOYMON038	g609224	BLASTN	690	1e-48	85
2035	16	701118459H1	SOYMON037	g609224	BLASTN	690	1e-48	85
2036	16	700942825H1	SOYMON024	g16508	BLASTN	691	1e-48	85
2037	16	701139796H1	SOYMON038	g497899	BLASTN	692	1e-48	87
2038	16	700557040H1	SOYMON001	g609224	BLASTN	692	1e-48	85
2039	16	701015715H1	SOYMON038	g497899	BLASTN	692	1e-48	87
2040	16	700726424H1	SOYMON009	g497899	BLASTN	693	1e-48	87
2041	16	700790811H1	SOYMON011	g497899	BLASTN	693	1e-48	87
2042	16	LIB3040-038-Q1-E1-E5	LIB3040	g16508	BLASTN	709	1e-48	85
2043	16	700896626H1	SOYMON027	g429107	BLASTN	430	1e-47	84
2044	16	700562158H1	SOYMON002	g609224	BLASTN	518	1e-47	84
2045	16	700747095H1	SOYMON013	g16508	BLASTN	538	1e-47	87
2046	16	700726532H1	SOYMON009	g609224	BLASTN	622	1e-47	85
2047	16	701137686H1	SOYMON038	g497899	BLASTN	671	1e-47	85
2048	16	701009148H1	SOYMON019	g16508	BLASTN	673	1e-47	91
2049	16	701048279H1	SOYMON032	g16508	BLASTN	674	1e-47	86
2050	16	701120185H1	SOYMON037	g16508	BLASTN	674	1e-47	91
2051	16	701040355H1	SOYMON029	g497899	BLASTN	675	1e-47	86
2052	16	701130203H1	SOYMON037	g609224	BLASTN	678	1e-47	83
2053	16	701015794H1	SOYMON038	g16508	BLASTN	681	1e-47	91
2054	16	700732181H1	SOYMON010	g16508	BLASTN	681	1e-47	86
2055	16	LIB3050-018-Q1-E1-D10	LIB3050	g2305013	BLASTN	696	1e-47	81
2056	16	700899157H1	SOYMON027	g609224	BLASTN	486	1e-46	84
2057	16	701119905H1	SOYMON037	g497899	BLASTN	507	1e-46	86
2058	16	701062873H1	SOYMON033	g497899	BLASTN	509	1e-46	88
2059	16	701210886H1	SOYMON035	g16508	BLASTN	540	1e-46	84
2060	16	700893278H1	SOYMON024	g16508	BLASTN	542	1e-46	77
2061	16	701036970H1	SOYMON029	g16508	BLASTN	579	1e-46	88
2062	16	700901932H1	SOYMON027	g609224	BLASTN	640	1e-46	85
2063	16	701044214H1	SOYMON032	g429105	BLASTN	658	1e-46	85

2064	16	701056917H1	SOYMON033	g16508	BLASTN	661	1e-46	85
2065	16	700981560H1	SOYMON009	g497899	BLASTN	661	1e-46	87
2066	16	701213107H1	SOYMON035	g609224	BLASTN	661	1e-46	83
2067	16	700834235H1	SOYMON019	g497899	BLASTN	661	1e-46	87
2068	16	700749413H1	SOYMON013	g16508	BLASTN	662	1e-46	85
2069	16	700889148H1	SOYMON024	g16508	BLASTN	662	1e-46	85
2070	16	700745009H1	SOYMON013	g609224	BLASTN	662	1e-46	85
2071	16	701206618H1	SOYMON035	g16508	BLASTN	663	1e-46	91
2072	16	701131927H1	SOYMON038	g497899	BLASTN	666	1e-46	87
2073	16	701119069H1	SOYMON037	g497899	BLASTN	666	1e-46	87
2074	16	701106908H1	SOYMON036	g497899	BLASTN	666	1e-46	87
2075	16	701103063H1	SOYMON028	g497899	BLASTN	666	1e-46	87
2076	16	700686659H1	SOYMON008	g166873	BLASTN	667	1e-46	86
2077	16	701040620H1	SOYMON029	g16508	BLASTN	669	1e-46	86
2078	16	701012134H1	SOYMON019	g497899	BLASTN	669	1e-46	85
2079	16	700957508H1	SOYMON022	g1724103	BLASTN	669	1e-46	82
2080	16	701008548H1	SOYMON019	g497899	BLASTN	500	1e-45	87
2081	16	700978303H1	SOYMON009	g497899	BLASTN	506	1e-45	87
2082	16	701119990H1	SOYMON037	g497899	BLASTN	512	1e-45	87
2083	16	700646222H1	SOYMON012	g16508	BLASTN	526	1e-45	85
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2085	16	700894009H1	SOYMON024	g497899	BLASTN	646	1e-45	87
2086	16	700908702H1	SOYMON022	g609224	BLASTN	646	1e-45	85
2087	16	700838642H1	SOYMON020	g609224	BLASTN	646	1e-45	85
2088	16	700832089H1	SOYMON019	g609224	BLASTN	646	1e-45	85
2089	16	700978279H1	SOYMON009	g609224	BLASTN	647	1e-45	80
2090	16	700555058H1	SOYMON001	g16508	BLASTN	649	1e-45	84
2091	16	700906478H1	SOYMON022	g497899	BLASTN	651	1e-45	87
2092	16	700897237H1	SOYMON027	g16508	BLASTN	653	1e-45	86
2093	16	701125786H1	SOYMON037	g16508	BLASTN	654	1e-45	84
2094	16	700562836H1	SOYMON002	g16508	BLASTN	655	1e-45	84
2095	16	700665969H1	SOYMON005	g497899	BLASTN	656	1e-45	87
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2100	16	701048175H1	SOYMON032	g16508	BLASTN	658	1e-45	91
2101	16	700901037H1	SOYMON027	g16508	BLASTN	658	1e-45	86
2102	16	700656917H1	SOYMON004	g1724103	BLASTN	407	1e-44	81
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2104	16	701002808H1	SOYMON019	g497899	BLASTN	503	1e-44	87
2105	16	701107115H1	SOYMON036	g497899	BLASTN	507	1e-44	87
2106	16	701122669H1	SOYMON037	g16508	BLASTN	636	1e-44	82
2107	16	700894409H1	SOYMON024	g497899	BLASTN	636	1e-44	87
2108	16	700848374H1	SOYMON021	g497899	BLASTN	636	1e-44	87
2109	16	700902420H1	SOYMON027	g497899	BLASTN	636	1e-44	87
2110	16	700747450H1	SOYMON013	g16508	BLASTN	638	1e-44	91
2111	16	701125869H1	SOYMON037	g16508	BLASTN	638	1e-44	91
2112	16	700731302H1	SOYMON010	g16508	BLASTN	639	1e-44	85
2113	16	701099068H1	SOYMON028	g2305013	BLASTN	640	1e-44	81
2114	16	700975556H1	SOYMON009	g450548	BLASTN	641	1e-44	84
2115	16	700889660H1	SOYMON024	g16508	BLASTN	642	1e-44	86
2116	16	700951744H1	SOYMON022	g16508	BLASTN	642	1e-44	86
2117	16	700750251H1	SOYMON013	g609224	BLASTN	643	1e-44	86

2118	16	700834611H1	SOYMON019	g16508	BLASTN	643	1e-44	91
2119	16	700565356H1	SOYMON002	g16508	BLASTN	643	1e-44	80
2120	16	700673803H1	SOYMON007	g16508	BLASTN	644	1e-44	84
2121	16	700958721H1	SOYMON022	g16508	BLASTN	645	1e-44	86
2122	16	700985717H1	SOYMON009	g16508	BLASTN	646	1e-44	82
2123	16	LIB3049-032-Q1-E1-A5	LIB3049	g16508	BLASTN	662	1e-44	76
2124	16	700733454H1	SOYMON010	g609224	BLASTN	432	1e-43	85
2125	16	700987656H1	SOYMON009	g497899	BLASTN	476	1e-43	87
2126	16	700755957H1	SOYMON014	g497899	BLASTN	483	1e-43	86
2127	16	700749331H1	SOYMON013	g2305013	BLASTN	521	1e-43	84
2128	16	700830984H1	SOYMON019	g497899	BLASTN	622	1e-43	86
2129	16	700906176H1	SOYMON022	g16508	BLASTN	623	1e-43	86
2130	16	701100070H2	SOYMON028	g16508	BLASTN	623	1e-43	91
2131	16	700954053H1	SOYMON022	g497899	BLASTN	624	1e-43	88
2132	16	700833949H1	SOYMON019	g497899	BLASTN	624	1e-43	88
2133	16	700976710H1	SOYMON009	g2305013	BLASTN	625	1e-43	79
2134	16	701117925H2	SOYMON037	g16508	BLASTN	625	1e-43	84
2135	16	700748825H1	SOYMON013	g16508	BLASTN	626	1e-43	84
2136	16	700899651H1	SOYMON027	g16508	BLASTN	626	1e-43	84
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2138	16	701009051H1	SOYMON019	g16508	BLASTN	628	1e-43	91
2139	16	700754423H1	SOYMON014	g16508	BLASTN	628	1e-43	91
2140	16	700760701H1	SOYMON015	g16508	BLASTN	628	1e-43	83
2141	16	701098124H1	SOYMON028	g2305013	BLASTN	628	1e-43	78
2142	16	700984979H1	SOYMON009	g16508	BLASTN	628	1e-43	91
2143	16	700565262H1	SOYMON002	g497899	BLASTN	629	1e-43	86
2144	16	700954979H1	SOYMON022	g497899	BLASTN	630	1e-43	87
2145	16	700834601H1	SOYMON019	g497899	BLASTN	630	1e-43	87
2146	16	700953156H1	SOYMON022	g609224	BLASTN	630	1e-43	85
2147	16	700865217H1	SOYMON016	g16508	BLASTN	631	1e-43	77
2148	16	700852947H1	SOYMON023	g16508	BLASTN	631	1e-43	84
2149	16	700943547H1	SOYMON024	g497899	BLASTN	631	1e-43	86
2150	16	701139277H1	SOYMON038	g609224	BLASTN	632	1e-43	82
2151	16	700900155H1	SOYMON027	g429105	BLASTN	264	1e-42	81
2152	16	700970581H1	SOYMON005	g497899	BLASTN	296	1e-42	86
2153	16	700654232H1	SOYMON003	g497899	BLASTN	348	1e-42	88
2154	16	700743608H1	SOYMON012	g497899	BLASTN	354	1e-42	86
2155	16	700986620H1	SOYMON009	g609224	BLASTN	360	1e-42	84
2156	16	700562590H1	SOYMON002	g16508	BLASTN	476	1e-42	83
2157	16	701119690H1	SOYMON037	g167961	BLASTN	506	1e-42	84
2158	16	700951730H1	SOYMON022	g497899	BLASTN	507	1e-42	87
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2163	16	700547973H1	SOYMON001	g497899	BLASTN	611	1e-42	84
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2166	16	700946136H1	SOYMON024	g16508	BLASTN	615	1e-42	85
2167	16	700665932H1	SOYMON005	g16508	BLASTN	616	1e-42	84
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2169	16	700962515H1	SOYMON022	g16508	BLASTN	618	1e-42	91
2170	16	700895685H1	SOYMON027	g429107	BLASTN	618	1e-42	77
2171	16	700752015H1	SOYMON014	g16508	BLASTN	620	1e-42	84

2172	16	701015704H1	SOYMON038	g16508	BLASTN	620	1e-42	85
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2178	16	700555653H1	SOYMON001	g166873	BLASTN	512	1e-41	85
2179	16	700958314H1	SOYMON022	g497899	BLASTN	599	1e-41	87
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2181	16	700901925H1	SOYMON027	g16508	BLASTN	599	1e-41	84
2182	16	700741987H1	SOYMON012	g497899	BLASTN	599	1e-41	87
2183	16	700662837H1	SOYMON005	g497899	BLASTN	599	1e-41	87
2184	16	701060927H1	SOYMON033	g497899	BLASTN	599	1e-41	87
2185	16	700562973H1	SOYMON002	g16508	BLASTN	601	1e-41	87
2186	16	700754586H1	SOYMON014	g16508	BLASTN	603	1e-41	84
2187	16	701132674H1	SOYMON038	g16508	BLASTN	604	1e-41	85
2188	16	701010012H2	SOYMON019	g609224	BLASTN	604	1e-41	84
2189	16	701123643H1	SOYMON037	g16508	BLASTN	604	1e-41	85
2190	16	700894196H1	SOYMON024	g16508	BLASTN	604	1e-41	85
2191	16	700899248H1	SOYMON027	g16508	BLASTN	604	1e-41	85
2192	16	701207680H1	SOYMON035	g16508	BLASTN	605	1e-41	84
2193	16	700899210H1	SOYMON027	g16508	BLASTN	605	1e-41	84
2194	16	700898762H1	SOYMON027	g16508	BLASTN	605	1e-41	87
2195	16	700983636H1	SOYMON009	g497899	BLASTN	606	1e-41	87
2196	16	700845511H1	SOYMON021	g16508	BLASTN	606	1e-41	89
2197	16	700563416H1	SOYMON002	g16508	BLASTN	606	1e-41	83
2198	16	701004041H1	SOYMON019	g16508	BLASTN	607	1e-41	84
2199	16	701097184H1	SOYMON028	g16508	BLASTN	607	1e-41	87
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2203	16	700831972H1	SOYMON019	g16508	BLASTN	609	1e-41	85
2204	16	701010090H2	SOYMON019	g16508	BLASTN	610	1e-41	87
2205	16	700890067H1	SOYMON024	g16508	BLASTN	610	1e-41	87
2206	16	700833227H1	SOYMON019	g16508	BLASTN	610	1e-41	85
2207	16	700563171H1	SOYMON002	g16508	BLASTN	370	1e-40	90
2208	16	701121457H1	SOYMON037	g609224	BLASTN	372	1e-40	85
2209	16	700566851H1	SOYMON002	g16508	BLASTN	402	1e-40	82
2210	16	700753221H1	SOYMON014	g609224	BLASTN	422	1e-40	84
2211	16	700749039H1	SOYMON013	g16508	BLASTN	475	1e-40	84
2212	16	700558940H1	SOYMON001	g16508	BLASTN	493	1e-40	80
2213	16	700757695H1	SOYMON015	g16508	BLASTN	526	1e-40	83
2214	16	701102262H1	SOYMON028	g2305013	BLASTN	587	1e-40	81
2215	16	700747484H1	SOYMON013	g16508	BLASTN	587	1e-40	85
2216	16	700891875H1	SOYMON024	g16508	BLASTN	587	1e-40	85
2217	16	700894439H1	SOYMON024	g497899	BLASTN	588	1e-40	88
2218	16	701062577H1	SOYMON033	g16508	BLASTN	588	1e-40	87
2219	16	700964366H1	SOYMON022	g16508	BLASTN	589	1e-40	85
2220	16	701210016H1	SOYMON035	g16508	BLASTN	589	1e-40	83
2221	16	700901573H1	SOYMON027	g16508	BLASTN	589	1e-40	85
2222	16	700750533H1	SOYMON014	g16508	BLASTN	589	1e-40	85
2223	16	700888820H1	SOYMON024	g497899	BLASTN	589	1e-40	87
2224	16	700891965H1	SOYMON024	g497899	BLASTN	589	1e-40	87
2225	16	700865001H1	SOYMON016	g16508	BLASTN	589	1e-40	85

2226	16	700654923H1	SOYMON004	g16508	BLASTN	590	1e-40	84
2227	16	700746169H1	SOYMON013	g16508	BLASTN	590	1e-40	84
2228	16	700745792H1	SOYMON013	g16508	BLASTN	591	1e-40	85
2229	16	700966953H1	SOYMON029	g16508	BLASTN	591	1e-40	85
2230	16	701141657H1	SOYMON038	g16508	BLASTN	592	1e-40	86
2231	16	700943078H1	SOYMON024	g16508	BLASTN	598	1e-40	85
2232	16	701137073H1	SOYMON038	g16508	BLASTN	598	1e-40	90
2233	16	700966730H1	SOYMON028	g16508	BLASTN	598	1e-40	84
2234	16	701137731H1	SOYMON038	g16508	BLASTN	371	1e-39	84
2235	16	701044050H1	SOYMON032	g497899	BLASTN	428	1e-39	89
2236	16	700993309H1	SOYMON011	g497899	BLASTN	434	1e-39	88
2237	16	700874483H1	SOYMON018	g497899	BLASTN	434	1e-39	87
2238	16	701014866H1	SOYMON019	g16508	BLASTN	454	1e-39	89
2239	16	700894603H1	SOYMON024	g16508	BLASTN	454	1e-39	85
2240	16	700958677H1	SOYMON022	g497899	BLASTN	455	1e-39	87
2241	16	700754001H1	SOYMON014	g609224	BLASTN	518	1e-39	85
2242	16	700946430H1	SOYMON024	g497899	BLASTN	578	1e-39	87
2243	16	700729892H1	SOYMON009	g497899	BLASTN	578	1e-39	87
2244	16	700753230H1	SOYMON014	g497899	BLASTN	578	1e-39	87
2245	16	700562584H1	SOYMON002	g16508	BLASTN	578	1e-39	82
2246	16	700842880H1	SOYMON020	g16508	BLASTN	580	1e-39	82
2247	16	700852561H1	SOYMON023	g16508	BLASTN	582	1e-39	85
2248	16	700941290H1	SOYMON024	g497899	BLASTN	583	1e-39	87
2249	16	700750361H1	SOYMON013	g497899	BLASTN	584	1e-39	80
2250	16	700841915H1	SOYMON020	g16508	BLASTN	585	1e-39	85
2251	16	700944462H1	SOYMON024	g16508	BLASTN	585	1e-39	85
2252	16	700548174H1	SOYMON002	g16508	BLASTN	342	1e-38	82
2253	16	700942324H1	SOYMON024	g497899	BLASTN	403	1e-38	87
2254	16	700788450H1	SOYMON011	g497899	BLASTN	416	1e-38	86
2255	16	701127954H1	SOYMON037	g16508	BLASTN	449	1e-38	76
2256	16	700742223H1	SOYMON012	g1724103	BLASTN	451	1e-38	77
2257	16	701102722H1	SOYMON028	g16508	BLASTN	466	1e-38	92
2258	16	701046957H1	SOYMON032	g16508	BLASTN	517	1e-38	85
2259	16	700836169H1	SOYMON019	g497899	BLASTN	517	1e-38	87
2260	16	700697967H1	SOYMON015	g16508	BLASTN	521	1e-38	84
2261	16	700678867H1	SOYMON007	g609224	BLASTN	566	1e-38	82
2262	16	700838753H1	SOYMON020	g16508	BLASTN	567	1e-38	85
2263	16	700726468H1	SOYMON009	g16508	BLASTN	570	1e-38	85
2264	16	701014631H1	SOYMON019	g497899	BLASTN	571	1e-38	87
2265	16	700728719H1	SOYMON009	g497899	BLASTN	573	1e-38	87
2266	16	700962582H1	SOYMON022	g497899	BLASTN	573	1e-38	87
2267	16	701123183H1	SOYMON037	g16508	BLASTN	573	1e-38	84
2268	16	700752347H1	SOYMON014	g16508	BLASTN	574	1e-38	87
2269	16	701103315H1	SOYMON028	g16508	BLASTN	394	1e-37	86
2270	16	700750955H1	SOYMON014	g497899	BLASTN	414	1e-37	88
2271	16	700867493H1	SOYMON016	g609224	BLASTN	433	1e-37	85
2272	16	701054760H1	SOYMON032	g16508	BLASTN	475	1e-37	85
2273	16	700900903H1	SOYMON027	g16508	BLASTN	501	1e-37	84
2274	16	701102294H1	SOYMON028	g16508	BLASTN	502	1e-37	87
2275	16	701124034H1	SOYMON037	g16508	BLASTN	512	1e-37	82
2276	16	700981476H1	SOYMON009	g16508	BLASTN	526	1e-37	83
2277	16	700903712H1	SOYMON022	g609224	BLASTN	552	1e-37	85
2278	16	700648751H1	SOYMON003	g1655577	BLASTN	554	1e-37	86
2279	16	700829930H1	SOYMON019	g609224	BLASTN	556	1e-37	84

2280	16	700758078H1	SOYMON015	g16508	BLASTN	556	1e-37	84
2281	16	700754248H1	SOYMON014	g16508	BLASTN	557	1e-37	81
2282	16	700834650H1	SOYMON019	g609224	BLASTN	557	1e-37	85
2283	16	700746279H1	SOYMON013	g16508	BLASTN	558	1e-37	82
2284	16	700869124H1	SOYMON016	g16508	BLASTN	559	1e-37	83
2285	16	701100219H1	SOYMON028	g2305013	BLASTN	560	1e-37	80
2286	16	700992589H1	SOYMON011	g497899	BLASTN	560	1e-37	80
2287	16	700865642H1	SOYMON016	g16508	BLASTN	562	1e-37	84
2288	16	701068835H1	SOYMON034	g429105	BLASTN	321	1e-36	86
2289	16	700746908H1	SOYMON013	g16508	BLASTN	373	1e-36	81
2290	16	700954719H1	SOYMON022	g16508	BLASTN	475	1e-36	86
2291	16	701042790H1	SOYMON029	g497899	BLASTN	489	1e-36	88
2292	16	700835259H1	SOYMON019	g497899	BLASTN	507	1e-36	88
2293	16	700565816H1	SOYMON002	g16508	BLASTN	519	1e-36	82
2294	16	700895811H1	SOYMON027	g609224	BLASTN	540	1e-36	83
2295	16	700975709H1	SOYMON009	g609224	BLASTN	541	1e-36	84
2296	16	700751645H1	SOYMON014	g16508	BLASTN	542	1e-36	85
2297	16	700567087H1	SOYMON002	g16508	BLASTN	542	1e-36	85
2298	16	700893027H1	SOYMON024	g609224	BLASTN	542	1e-36	85
2299	16	700891185H1	SOYMON024	g609224	BLASTN	543	1e-36	84
2300	16	700851376H1	SOYMON023	g16508	BLASTN	543	1e-36	83
2301	16	700898322H1	SOYMON027	g609224	BLASTN	547	1e-36	85
2302	16	700762881H1	SOYMON015	g16508	BLASTN	323	1e-35	85
2303	16	700960023H1	SOYMON022	g16508	BLASTN	370	1e-35	90
2304	16	701136486H1	SOYMON038	g497899	BLASTN	378	1e-35	85
2305	16	700987688H1	SOYMON009	g497899	BLASTN	387	1e-35	83
2306	16	700836508H1	SOYMON020	g16508	BLASTN	431	1e-35	85
2307	16	700990779H1	SOYMON011	g167961	BLASTN	471	1e-35	86
2308	16	700753019H1	SOYMON014	g497899	BLASTN	476	1e-35	83
2309	16	701138490H1	SOYMON038	g16508	BLASTN	481	1e-35	83
2310	16	700751771H1	SOYMON014	g609224	BLASTN	528	1e-35	84
2311	16	701048324H1	SOYMON032	g609224	BLASTN	529	1e-35	84
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2313	16	700986295H1	SOYMON009	g497899	BLASTN	533	1e-35	86
2314	16	701205693H1	SOYMON035	g16508	BLASTN	535	1e-35	84
2315	16	700865674H1	SOYMON016	g609224	BLASTN	536	1e-35	85
2316	16	700943777H1	SOYMON024	g16508	BLASTN	536	1e-35	84
2317	16	700968207H1	SOYMON035	g609224	BLASTN	536	1e-35	85
2318	16	700898370H1	SOYMON027	g609224	BLASTN	536	1e-35	85
2319	16	700987890H1	SOYMON009	g609224	BLASTN	536	1e-35	85
2320	16	700896016H1	SOYMON027	g609224	BLASTN	536	1e-35	85
2321	16	700554440H1	SOYMON001	g16508	BLASTN	283	1e-34	82
2322	16	700789855H2	SOYMON011	g16508	BLASTN	293	1e-34	91
2323	16	701101393H1	SOYMON028	g16508	BLASTN	311	1e-34	84
2324	16	700946335H1	SOYMON024	g16508	BLASTN	323	1e-34	86
2325	16	701207420H1	SOYMON035	g169664	BLASTN	350	1e-34	88
2326	16	700733034H1	SOYMON010	g16508	BLASTN	384	1e-34	81
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2328	16	700901808H1	SOYMON027	g497899	BLASTN	430	1e-34	81
2329	16	700760954H1	SOYMON015	g609224	BLASTN	514	1e-34	84
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2331	16	701039157H1	SOYMON029	g609224	BLASTN	520	1e-34	76
2332	16	700991056H1	SOYMON011	g166873	BLASTN	520	1e-34	80
2333	16	701097173H1	SOYMON028	g609224	BLASTN	521	1e-34	85

2334	16	700900989H1	SOYMON027	g497899	BLASTN	521	1e-34	86
2335	16	700895584H1	SOYMON027	g609224	BLASTN	521	1e-34	85
2336	16	700726668H1	SOYMON009	g16508	BLASTN	521	1e-34	85
2337	16	701011191H1	SOYMON019	g16508	BLASTN	521	1e-34	85
2338	16	701100827H1	SOYMON028	g16508	BLASTN	522	1e-34	84
2339	16	701156732H1	SOYMON031	g16508	BLASTN	522	1e-34	84
2340	16	700889752H1	SOYMON024	g609224	BLASTN	523	1e-34	84
2341	16	701105873H1	SOYMON036	g16508	BLASTN	524	1e-34	87
2342	16	700958346H1	SOYMON022	g497899	BLASTN	525	1e-34	84
2343	16	700962972H1	SOYMON022	g609224	BLASTN	525	1e-34	84
2344	16	701055918H1	SOYMON032	g16508	BLASTN	526	1e-34	85
2345	16	701123061H1	SOYMON037	g16508	BLASTN	526	1e-34	85
2346	16	701109796H1	SOYMON036	g166873	BLASTN	335	1e-33	86
2347	16	701207350H1	SOYMON035	g497899	BLASTN	349	1e-33	89
2348	16	700835692H1	SOYMON019	g16508	BLASTN	377	1e-33	81
2349	16	700729083H1	SOYMON009	g16508	BLASTN	448	1e-33	85
2350	16	LIB3040-049-Q1-E1-E8	LIB3040	g16508	BLASTN	464	1e-33	80
2351	16	700896567H1	SOYMON027	g497899	BLASTN	502	1e-33	81
2352	16	700668032H1	SOYMON006	g609224	BLASTN	504	1e-33	85
2353	16	700895062H1	SOYMON024	g609224	BLASTN	505	1e-33	83
2354	16	700961178H1	SOYMON022	g16508	BLASTN	506	1e-33	84
2355	16	701202590H1	SOYMON035	g497899	BLASTN	508	1e-33	86
2356	16	700754960H1	SOYMON014	g16508	BLASTN	512	1e-33	83
2357	16	700748584H1	SOYMON013	g16508	BLASTN	512	1e-33	84
2358	16	700791669H1	SOYMON011	g609224	BLASTN	512	1e-33	84
2359	16	701210405H1	SOYMON035	g16508	BLASTN	526	1e-33	83
2360	16	LIB3040-054-Q1-E1-D8	LIB3040	g16508	BLASTN	531	1e-33	80
2361	16	700791176H1	SOYMON011	g497899	BLASTN	311	1e-32	87
2362	16	LIB3049-029-Q1-E1-C5	LIB3049	g167961	BLASTN	368	1e-32	73
2363	16	700893458H1	SOYMON024	g497899	BLASTN	380	1e-32	87
2364	16	700829728H1	SOYMON019	g497899	BLASTN	490	1e-32	88
2365	16	700833137H1	SOYMON019	g609224	BLASTN	490	1e-32	85
2366	16	701204592H2	SOYMON035	g609224	BLASTN	493	1e-32	86
2367	16	700834821H1	SOYMON019	g609224	BLASTN	494	1e-32	78
2368	16	700757167H1	SOYMON015	g16508	BLASTN	494	1e-32	85
2369	16	701203730H2	SOYMON035	g16508	BLASTN	496	1e-32	82
2370	16	701044359H1	SOYMON032	g609224	BLASTN	497	1e-32	84
2371	16	701010095H2	SOYMON019	g16508	BLASTN	498	1e-32	86
2372	16	701100059H2	SOYMON028	g16508	BLASTN	499	1e-32	80
2373	16	700844256H1	SOYMON021	g16508	BLASTN	500	1e-32	80
2374	16	700968296H1	SOYMON035	g497899	BLASTN	501	1e-32	85
2375	16	701110404H1	SOYMON036	g16508	BLASTN	333	1e-31	84
2376	16	700869025H1	SOYMON016	g497899	BLASTN	340	1e-31	86
2377	16	700556245H1	SOYMON001	g609224	BLASTN	355	1e-31	84
2378	16	700566166H1	SOYMON002	g726031	BLASTN	402	1e-31	77
2379	16	700941481H1	SOYMON024	g497899	BLASTN	423	1e-31	79
2380	16	700896940H1	SOYMON027	g169664	BLASTN	477	1e-31	85
2381	16	701145429H1	SOYMON031	g609224	BLASTN	478	1e-31	85
2382	16	700946496H1	SOYMON024	g609224	BLASTN	488	1e-31	86
2383	16	700902149H1	SOYMON027	g1655577	BLASTN	488	1e-31	87
2384	16	700653072H1	SOYMON003	g497899	BLASTN	489	1e-31	88
2385	16	701000261H1	SOYMON018	g16508	BLASTN	495	1e-31	78
2386	16	701039358H1	SOYMON029	g609224	BLASTN	320	1e-30	85
2387	16	701156951H1	SOYMON031	g609224	BLASTN	467	1e-30	86

2388	16	701040880H1	SOYMON029	g497899	BLASTN	477	1e-30	89
2389	16	700979632H2	SOYMON009	g609224	BLASTN	490	1e-30	83
2390	16	700983678H1	SOYMON009	g16508	BLASTN	192	1e-29	86
2391	16	700893644H1	SOYMON024	g609224	BLASTN	320	1e-29	85
2392	16	700962437H1	SOYMON022	g609224	BLASTN	364	1e-29	83
2393	16	701150545H1	SOYMON031	g16508	BLASTN	457	1e-29	86
2394	16	700555403H1	SOYMON001	g16508	BLASTN	458	1e-29	90
2395	16	700794307H1	SOYMON017	g16508	BLASTN	460	1e-29	87
2396	16	701137971H1	SOYMON038	g16508	BLASTN	460	1e-29	84
2397	16	700893774H1	SOYMON024	g609224	BLASTN	461	1e-29	86
2398	16	700565272H1	SOYMON002	g609224	BLASTN	464	1e-29	74
2399	16	700667161H1	SOYMON006	g16508	BLASTN	468	1e-29	75
2400	16	700752952H1	SOYMON014	g609224	BLASTN	279	1e-28	78
2401	16	700901534H1	SOYMON027	g2305013	BLASTN	288	1e-28	85
2402	16	701006617H1	SOYMON019	g497899	BLASTN	358	1e-28	79
2403	16	700753459H1	SOYMON014	g609224	BLASTN	446	1e-28	81
2404	16	701157089H1	SOYMON031	g609224	BLASTN	448	1e-28	84
2405	16	700831271H1	SOYMON019	g16508	BLASTN	453	1e-28	87
2406	16	701207325H1	SOYMON035	g167961	BLASTN	251	1e-27	81
2407	16	700566121H1	SOYMON002	g16508	BLASTN	259	1e-27	75
2408	16	701137878H1	SOYMON038	g609224	BLASTN	280	1e-27	85
2409	16	700763957H1	SOYMON019	g497899	BLASTN	430	1e-27	88
2410	16	701015858H1	SOYMON038	g609224	BLASTN	431	1e-27	86
2411	16	700742849H1	SOYMON012	g497899	BLASTN	434	1e-27	88
2412	16	701102648H1	SOYMON028	g16508	BLASTN	436	1e-27	89
2413	16	700940955H1	SOYMON024	g609556	BLASTN	438	1e-27	85
2414	16	700889805H1	SOYMON024	g16508	BLASTN	441	1e-27	89
2415	16	701061930H1	SOYMON033	g16508	BLASTN	315	1e-26	77
2416	16	700901375H1	SOYMON027	g609224	BLASTN	323	1e-26	84
2417	16	700989056H1	SOYMON011	g609224	BLASTN	345	1e-26	82
2418	16	700665988H1	SOYMON005	g960356	BLASTN	420	1e-26	79
2419	16	700893352H1	SOYMON024	g497899	BLASTN	428	1e-26	87
2420	16	701122945H1	SOYMON037	g16508	BLASTN	269	1e-25	76
2421	16	700992929H1	SOYMON011	g16508	BLASTN	328	1e-25	78
2422	16	700557564H1	SOYMON001	g609224	BLASTN	413	1e-25	85
2423	16	701102620H1	SOYMON028	g609224	BLASTN	414	1e-25	82
2424	16	701062321H1	SOYMON033	g497899	BLASTN	267	1e-24	87
2425	16	701062258H1	SOYMON033	g450548	BLASTN	391	1e-24	83
2426	16	701145703H1	SOYMON031	g609224	BLASTN	411	1e-24	85
2427	16	701144943H1	SOYMON031	g450548	BLASTN	421	1e-24	85
2428	16	701134190H1	SOYMON038	g2305013	BLASTN	268	1e-23	87
2429	16	701132116H1	SOYMON038	g450548	BLASTN	385	1e-23	85
2430	16	701144522H1	SOYMON031	g450548	BLASTN	406	1e-23	85
2431	16	700738002H1	SOYMON012	g1655578	BLASTX	205	1e-21	84
2432	16	700756686H1	SOYMON014	g16508	BLASTN	235	1e-21	76
2433	16	700649058H1	SOYMON003	g16508	BLASTN	360	1e-21	85
2434	16	701152050H1	SOYMON031	g497899	BLASTN	233	1e-20	87
2435	16	701156991H1	SOYMON031	g497900	BLASTX	146	1e-19	98
2436	16	700761949H1	SOYMON015	g497900	BLASTX	173	1e-19	98
2437	16	700988163H1	SOYMON009	g609224	BLASTN	243	1e-19	81
2438	16	700666050H1	SOYMON005	g960357	BLASTX	183	1e-18	89
2439	16	700896896H1	SOYMON027	g497900	BLASTX	95	1e-17	82
2440	16	701100249H1	SOYMON028	g497900	BLASTX	104	1e-17	79
2441	16	701061719H1	SOYMON033	g609224	BLASTN	310	1e-17	67

2442	16	700674836H1	SOYMON007	g16508	BLASTN	331	1e-17	84
2443	16	700908822H1	SOYMON022	g169665	BLASTX	171	1e-16	100
2444	16	700898670H1	SOYMON027	g166872	BLASTX	172	1e-16	93
2445	16	700650967H1	SOYMON003	g16845	BLASTX	147	1e-15	100
2446	16	701132185H1	SOYMON038	g16845	BLASTX	151	1e-15	100
2447	16	700648929H1	SOYMON003	g1033190	BLASTX	156	1e-14	96
2448	16	700960809H1	SOYMON022	g16508	BLASTN	168	1e-14	88
2449	16	701101753H1	SOYMON028	g16845	BLASTX	141	1e-13	88
2450	16	700742010H1	SOYMON012	g609224	BLASTN	273	1e-13	88
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2452	16	700979242H1	SOYMON009	g609224	BLASTN	165	1e-12	81
2453	16	700740838H1	SOYMON012	g609224	BLASTN	253	1e-12	88
2454	16	700832383H1	SOYMON019	g16845	BLASTX	82	1e-11	71
2455	16	700830938H1	SOYMON019	g16845	BLASTX	92	1e-11	90
2456	16	700564686H1	SOYMON002	g1655578	BLASTX	95	1e-11	97
2457	16	700753178H1	SOYMON014	g16845	BLASTX	107	1e-10	78
2458	16	700563834H1	SOYMON002	g497900	BLASTX	124	1e-10	100
2459	16	700897739H1	SOYMON027	g16845	BLASTX	125	1e-10	86
2460	16	700725722H1	SOYMON009	g609225	BLASTX	125	1e-10	92
2461	16	701210357H1	SOYMON035	g497900	BLASTX	128	1e-10	100
2462	16	700833654H1	SOYMON019	g609224	BLASTN	243	1e-10	87
2463	16	701010334H1	SOYMON019	g609224	BLASTN	258	1e-10	86
2464	16	700567622H1	SOYMON002	g166874	BLASTX	93	1e-9	100
2465	16	700647933H1	SOYMON003	g609225	BLASTX	120	1e-9	81
2466	16	700742255H1	SOYMON012	g429107	BLASTN	160	1e-9	86
2467	16	700981506H1	SOYMON009	g609224	BLASTN	248	1e-9	88
2468	16	700962044H1	SOYMON022	g497900	BLASTX	113	1e-8	100
2469	16	701039604H1	SOYMON029	g497900	BLASTX	113	1e-8	100
2470	16	701009941H2	SOYMON019	g609225	BLASTX	114	1e-8	70
2471	16	700976956H1	SOYMON009	g609225	BLASTX	118	1e-8	96
2472	18138	701120722H1	SOYMON037	g169664	BLASTN	514	1e-33	92
2473	18138	700946044H1	SOYMON024	g169664	BLASTN	437	1e-26	90
2474	18138	700664443H1	SOYMON005	g17262	BLASTX	162	1e-16	88
2475	18138	700665162H1	SOYMON005	g17262	BLASTX	162	1e-16	88
2476	18138	701143667H1	SOYMON038	g16961	BLASTX	123	1e-11	95
2477	18138	701099150H1	SOYMON028	g16961	BLASTX	112	1e-9	90
2478	27686	700909141H1	SOYMON022	g726027	BLASTN	723	1e-51	84
2479	27686	701145458H1	SOYMON031	g726027	BLASTN	694	1e-49	86

ADENOSYLMETHIONINE DECARBOXYLASE (EC 4.1.1.50)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
430	-700151703	700151703H1	SATMON007	g1532072	BLASTN	717	1e-50	91
431	-700165608	700165608H1	SATMON013	g1532072	BLASTN	605	1e-41	75
432	-700166868	700166868H1	SATMON013	g1532072	BLASTN	593	1e-40	90
433	-700242148	700242148H1	SATMON010	g1532048	BLASTX	142	1e-12	88
434	-700354923	700354923H1	SATMON024	g1532072	BLASTN	887	1e-74	89
435	-700422279	700422279H1	SATMONN01	g1532072	BLASTN	623	1e-61	88
436	-700455682	700455682H1	SATMON029	g1532047	BLASTN	681	1e-47	77
437	-700477645	700477645H1	SATMON025	g1532048	BLASTX	90	1e-12	71
438	-700550509	700550509H1	SATMON022	g1532047	BLASTN	399	1e-41	80
439	-700572502	700572502H1	SATMON030	g1532048	BLASTX	93	1e-20	70
440	-700618258	700618258H1	SATMON033	g1532072	BLASTN	368	1e-67	92

441	-701165456	701165456H1	SATMONN04	g1532072	BLASTN	436	1e-26	71
442	-L30622289	LIB3062-004-Q1-K1-E10	LIB3062	g1532047	BLASTN	406	1e-26	82
443	-L30623185	LIB3062-026-Q1-K1-E2	LIB3062	g1532072	BLASTN	338	1e-19	62
444	-L30625601	LIB3062-033-Q1-K1-A9	LIB3062	g1403043	BLASTN	758	1e-54	68
445	-L30661842	LIB3066-009-Q1-K1-E4	LIB3066	g1532072	BLASTN	398	1e-22	86
446	-L30681932	LIB3068-020-Q1-K1-C8	LIB3068	g1532072	BLASTN	205	1e-28	89
447	-L30687176	LIB3068-059-Q1-K1-C1	LIB3068	g1532072	BLASTN	216	1e-20	87
448	-L30692075	LIB3069-004-Q1-K1-G11	LIB3069	g1532072	BLASTN	619	1e-40	90
449	-L30783194	LIB3078-052-Q1-K1-E4	LIB3078	g1532072	BLASTN	447	1e-40	76
450	-L30792336	LIB3079-021-Q1-K1-E12	LIB3079	g1532072	BLASTN	217	1e-13	80
451	1471	700106762H1	SATMON010	g1532072	BLASTN	323	1e-59	84
452	1471	701163744H1	SATMONN04	g1532072	BLASTN	220	1e-41	86
453	1471	LIB3059-023-Q1-K1-A11	LIB3059	g1532072	BLASTN	340	1e-39	80
454	1471	700574530H1	SATMON030	g1532072	BLASTN	247	1e-34	82
455	1471	LIB83-003-Q1-E1-G1	LIB83	g1532072	BLASTN	239	1e-24	80
456	1471	701161147H1	SATMONN04	g1532072	BLASTN	239	1e-16	80
457	1471	700477336H1	SATMON025	g1532072	BLASTN	235	1e-10	91
458	16729	700169502H1	SATMON013	g1403043	BLASTN	456	1e-28	65
459	16729	700088201H1	SATMON011	g1532048	BLASTX	123	1e-22	60
460	16729	700165440H1	SATMON013	g1532048	BLASTX	162	1e-15	65
461	16866	700072905H1	SATMON007	g1532047	BLASTN	368	1e-19	71
462	16866	700350558H1	SATMON023	g1532047	BLASTN	301	1e-14	70
463	16866	700088370H1	SATMON011	g1532047	BLASTN	306	1e-14	70
464	2324	LIB3066-042-Q1-K1-H2	LIB3066	g1403043	BLASTN	1344	1e-103	79
465	2324	LIB3059-011-Q1-K1-B2	LIB3059	g1403043	BLASTN	1351	1e-103	78
466	2324	LIB3059-042-Q1-K1-B7	LIB3059	g1403043	BLASTN	1230	1e-100	80
467	2324	LIB3062-036-Q1-K1-F2	LIB3062	g1532072	BLASTN	1097	1e-91	80
468	2324	LIB3069-020-Q1-K1-A5	LIB3069	g1403043	BLASTN	925	1e-82	80
469	2324	LIB189-023-Q1-E1-H3	LIB189	g1532072	BLASTN	1085	1e-81	78
470	2324	700266088H1	SATMON017	g1532047	BLASTN	998	1e-74	80
471	2324	LIB3062-026-Q1-K1-E6	LIB3062	g1532047	BLASTN	982	1e-72	77
472	2324	700083335H1	SATMON011	g1403043	BLASTN	960	1e-71	79
473	2324	LIB189-015-Q1-E1-D3	LIB189	g1532047	BLASTN	970	1e-71	77
474	2324	LIB3079-013-Q1-K1-B3	LIB3079	g1403043	BLASTN	953	1e-70	81
475	2324	700262129H1	SATMON017	g1403043	BLASTN	936	1e-69	79
476	2324	700265667H1	SATMON017	g1403043	BLASTN	694	1e-66	81
477	2324	700807255H1	SATMON036	g1532072	BLASTN	850	1e-62	81
478	2324	700196129H1	SATMON014	g1403043	BLASTN	853	1e-62	83
479	2324	LIB3066-042-Q1-K1-H1	LIB3066	g1403043	BLASTN	842	1e-61	80
480	2324	700458321H1	SATMON029	g1403043	BLASTN	501	1e-58	80
481	2324	700197643H1	SATMON014	g1403043	BLASTN	461	1e-57	80
482	2324	LIB143-029-Q1-E1-H3	LIB143	g1532072	BLASTN	786	1e-56	78
483	2324	700197842H1	SATMON014	g1403043	BLASTN	688	1e-48	85
484	2324	700196807H1	SATMON014	g1532072	BLASTN	678	1e-47	75
485	2324	700263712H1	SATMON017	g1532072	BLASTN	403	1e-45	75
486	2324	LIB143-006-Q1-E1-F9	LIB143	g1403043	BLASTN	324	1e-42	83
487	2324	700267496H1	SATMON017	g1532047	BLASTN	594	1e-40	83
488	2324	700172551H1	SATMON013	g1532072	BLASTN	546	1e-36	74
489	2324	700211893H1	SATMON016	g1532047	BLASTN	542	1e-35	82
490	2324	700264065H1	SATMON017	g1532047	BLASTN	515	1e-34	83
491	2324	700465305H1	SATMON025	g1532073	BLASTX	148	1e-26	61
492	2324	700455052H1	SATMON029	g1403043	BLASTN	274	1e-26	79
493	2324	700473305H1	SATMON025	g1403043	BLASTN	446	1e-26	74
494	2324	700475851H1	SATMON025	g1532047	BLASTN	333	1e-18	78

495	2324	700263111H1	SATMON017	g1532073	BLASTX	165	1e-15	72
496	2324	700465705H1	SATMON025	g1403044	BLASTX	78	1e-8	76
497	3185	700264424H1	SATMON017	g1403043	BLASTN	469	1e-41	81
498	3185	LIB143-007-Q1-E1-H2	LIB143	g1403043	BLASTN	464	1e-36	80
499	3185	700262548H1	SATMON017	g1532047	BLASTN	368	1e-34	80
500	3185	700263845H1	SATMON017	g1403043	BLASTN	455	1e-34	81
501	3185	LIB3068-025-Q1-K1-G10	LIB3068	g1403043	BLASTN	288	1e-32	81
502	3185	700264569H1	SATMON017	g1403043	BLASTN	469	1e-32	82
503	3185	700243571H1	SATMON010	g1532047	BLASTN	461	1e-28	77
504	3185	700265453H1	SATMON017	g1532047	BLASTN	269	1e-27	84
505	3185	700267779H1	SATMON017	g1532047	BLASTN	257	1e-26	85
506	3185	700382373H1	SATMON024	g1532047	BLASTN	255	1e-24	86
507	3185	700258727H1	SATMON017	g1532047	BLASTN	255	1e-24	84
508	3185	LIB3069-018-Q1-K1-F5	LIB3069	g1532047	BLASTN	255	1e-21	77
509	3185	LIB3066-038-Q1-K1-C2	LIB3066	g1403043	BLASTN	242	1e-17	68
510	3185	700334654H1	SATMON019	g1532047	BLASTN	248	1e-17	90
511	3185	700262830H1	SATMON017	g1403043	BLASTN	276	1e-12	78
512	3185	700264727H1	SATMON017	g1532047	BLASTN	255	1e-10	92
513	3185	700238407H1	SATMON010	g1532047	BLASTN	255	1e-10	92
514	3185	700441952H1	SATMON026	g1532047	BLASTN	255	1e-10	92
515	3185	700268188H1	SATMON017	g1532047	BLASTN	255	1e-10	92
516	3185	700801627H1	SATMON036	g1532047	BLASTN	255	1e-10	92
517	3185	700261609H1	SATMON017	g1532047	BLASTN	255	1e-10	92
518	3185	700258510H1	SATMON017	g1532047	BLASTN	255	1e-10	92
519	3185	700258779H1	SATMON017	g1532047	BLASTN	255	1e-10	92
520	3185	700256838H1	SATMON017	g1532047	BLASTN	255	1e-10	92
521	3185	700263361H1	SATMON017	g1532047	BLASTN	255	1e-10	92
522	3185	700257102H1	SATMON017	g1532047	BLASTN	255	1e-10	92
523	3185	700239452H1	SATMON010	g1532047	BLASTN	245	1e-9	91
524	3185	700262045H1	SATMON017	g1532047	BLASTN	250	1e-9	90
525	8	LIB3066-027-Q1-K1-C6	LIB3066	g1532072	BLASTN	1414	1e-181	97
526	8	LIB3066-048-Q1-K1-C9	LIB3066	g1532072	BLASTN	1715	1e-173	98
527	8	LIB3066-007-Q1-K1-B4	LIB3066	g1532072	BLASTN	2146	1e-170	97
528	8	LIB3066-019-Q1-K1-B9	LIB3066	g1532072	BLASTN	1884	1e-168	98
529	8	LIB148-038-Q1-E1-A3	LIB148	g1532072	BLASTN	1585	1e-164	99
530	8	LIB3068-002-Q1-K1-H5	LIB3068	g1532072	BLASTN	2051	1e-162	98
531	8	LIB3067-035-Q1-K1-E9	LIB3067	g1532072	BLASTN	1594	1e-161	98
532	8	LIB189-020-Q1-E1-E8	LIB189	g1532072	BLASTN	1501	1e-160	98
533	8	LIB3078-057-Q1-K1-C12	LIB3078	g1532072	BLASTN	2026	1e-160	96
534	8	LIB3066-053-Q1-K1-A8	LIB3066	g1532072	BLASTN	1713	1e-159	93
535	8	LIB189-006-Q1-E1-C6	LIB189	g1532072	BLASTN	1676	1e-157	98
536	8	LIB3078-054-Q1-K1-E4	LIB3078	g1532072	BLASTN	1997	1e-157	95
537	8	LIB3069-028-Q1-K1-A11	LIB3069	g1532072	BLASTN	1980	1e-156	96
538	8	LIB3069-045-Q1-K1-H7	LIB3069	g1532072	BLASTN	1989	1e-156	98
539	8	LIB148-025-Q1-E1-F7	LIB148	g1532072	BLASTN	1954	1e-154	97
540	8	LIB189-014-Q1-E1-F11	LIB189	g1532072	BLASTN	1925	1e-151	94
541	8	LIB3060-014-Q1-K1-C5	LIB3060	g1532072	BLASTN	1780	1e-150	96
542	8	LIB148-057-Q1-E1-C2	LIB148	g1532072	BLASTN	1000	1e-149	98
543	8	LIB148-015-Q1-E1-F2	LIB148	g1532072	BLASTN	1886	1e-148	94
544	8	LIB3066-045-Q1-K1-A2	LIB3066	g1532072	BLASTN	914	1e-146	91
545	8	LIB148-064-Q1-E1-A3	LIB148	g1532072	BLASTN	1660	1e-146	93
546	8	LIB3061-047-Q1-K1-G1	LIB3061	g1532072	BLASTN	1867	1e-146	92
547	8	LIB148-040-Q1-E1-F1	LIB148	g1532072	BLASTN	1706	1e-145	94
548	8	LIB3069-012-Q1-K1-B6	LIB3069	g1532072	BLASTN	1630	1e-144	87

549	8	LIB3068-009-Q1-K1-A8	LIB3068	g1532072	BLASTN	1802	1e-141	97
550	8	LIB148-004-Q1-E1-D2	LIB148	g1532072	BLASTN	818	1e-139	91
551	8	LIB3068-002-Q1-K1-A1	LIB3068	g1532072	BLASTN	944	1e-137	95
552	8	LIB3067-035-Q1-K1-H9	LIB3067	g1532072	BLASTN	1701	1e-137	98
553	8	LIB3068-033-Q1-K1-G12	LIB3068	g1532072	BLASTN	1093	1e-130	89
554	8	700572229H1	SATMON030	g1532072	BLASTN	1135	1e-128	99
555	8	LIB3078-052-Q1-K1-E1	LIB3078	g1532072	BLASTN	1235	1e-127	85
556	8	700572579H1	SATMON030	g1532072	BLASTN	1625	1e-126	98
557	8	LIB3066-025-Q1-K1-F2	LIB3066	g1532072	BLASTN	1625	1e-126	100
558	8	LIB3068-048-Q1-K1-F9	LIB3068	g1532072	BLASTN	1538	1e-125	98
559	8	700098413H1	SATMON009	g1532072	BLASTN	1595	1e-124	100
560	8	700573235H1	SATMON030	g1532072	BLASTN	1513	1e-123	98
561	8	700090946H1	SATMON011	g1532072	BLASTN	1585	1e-123	100
562	8	700092465H1	SATMON008	g1532072	BLASTN	1541	1e-122	98
563	8	700074625H1	SATMON007	g1532072	BLASTN	1570	1e-122	100
564	8	LIB3059-007-Q1-K1-C10	LIB3059	g1532072	BLASTN	1401	1e-119	94
565	8	700072828H1	SATMON007	g1532072	BLASTN	1540	1e-119	100
566	8	700619106H1	SATMON034	g1532072	BLASTN	833	1e-118	97
567	8	700074853H1	SATMON007	g1532072	BLASTN	1515	1e-117	100
568	8	700201293H1	SATMON003	g1532072	BLASTN	1517	1e-117	97
569	8	700075896H1	SATMON007	g1532072	BLASTN	1006	1e-115	99
570	8	LIB3059-052-Q1-K1-A1	LIB3059	g1532072	BLASTN	1241	1e-115	92
571	8	700091576H1	SATMON011	g1532072	BLASTN	943	1e-114	98
572	8	LIB3078-015-Q1-K1-D7	LIB3078	g1532072	BLASTN	1218	1e-114	87
573	8	700074733H1	SATMON007	g1532072	BLASTN	1475	1e-114	100
574	8	700381421H1	SATMON023	g1532072	BLASTN	1475	1e-114	100
575	8	700085594H1	SATMON011	g1532072	BLASTN	1477	1e-114	99
576	8	700095883H1	SATMON008	g1532072	BLASTN	1477	1e-114	99
577	8	700338237H1	SATMON020	g1532072	BLASTN	1478	1e-114	99
578	8	700549813H1	SATMON022	g1532072	BLASTN	1481	1e-114	99
579	8	700097935H1	SATMON009	g1532072	BLASTN	1484	1e-114	98
580	8	700572978H1	SATMON030	g1532072	BLASTN	865	1e-113	96
581	8	700196464H1	SATMON014	g1532072	BLASTN	1044	1e-113	92
582	8	700381412H1	SATMON023	g1532072	BLASTN	1168	1e-113	98
583	8	700027839H1	SATMON003	g1532072	BLASTN	1472	1e-113	99
584	8	700623344H1	SATMON034	g1532072	BLASTN	1085	1e-112	94
585	8	700025858H1	SATMON003	g1532072	BLASTN	1455	1e-112	100
586	8	LIB3059-017-Q1-K1-H5	LIB3059	g1532072	BLASTN	1459	1e-112	97
587	8	700475019H1	SATMON025	g1532072	BLASTN	1390	1e-111	100
588	8	700338357H1	SATMON020	g1532072	BLASTN	1440	1e-111	100
589	8	700256796H1	SATMON017	g1532072	BLASTN	1400	1e-110	100
590	8	700071692H1	SATMON007	g1532072	BLASTN	1430	1e-110	98
591	8	700339073H1	SATMON020	g1532072	BLASTN	1357	1e-109	95
592	8	700106916H1	SATMON010	g1532072	BLASTN	1415	1e-109	93
593	8	700468234H1	SATMON025	g1532072	BLASTN	1420	1e-109	100
594	8	700214482H1	SATMON016	g1532072	BLASTN	1425	1e-109	100
595	8	700466437H1	SATMON025	g1532072	BLASTN	1403	1e-108	98
596	8	700205576H1	SATMON003	g1532072	BLASTN	1404	1e-108	98
597	8	700043455H1	SATMON004	g1532072	BLASTN	1405	1e-108	100
598	8	700348439H1	SATMON023	g1532072	BLASTN	1407	1e-108	99
599	8	700093131H1	SATMON008	g1532072	BLASTN	755	1e-107	100
600	8	700571851H1	SATMON030	g1532072	BLASTN	1302	1e-107	99
601	8	700088142H1	SATMON011	g1532072	BLASTN	1392	1e-107	99
602	8	700085934H1	SATMON011	g1532072	BLASTN	1397	1e-107	98

603	8	700028465H1	SATMON003	g1532072	BLASTN	1258	1e-106	98
604	8	700236818H1	SATMON010	g1532072	BLASTN	1380	1e-106	100
605	8	700583691H1	SATMON031	g1532072	BLASTN	1382	1e-106	99
606	8	700095585H1	SATMON008	g1532072	BLASTN	1383	1e-106	94
607	8	700105140H1	SATMON010	g1532072	BLASTN	1375	1e-105	100
608	8	700338486H1	SATMON020	g1532072	BLASTN	893	1e-104	98
609	8	700214178H1	SATMON016	g1532072	BLASTN	1361	1e-104	99
610	8	700090613H1	SATMON011	g1532072	BLASTN	699	1e-103	99
611	8	700576189H1	SATMON030	g1532072	BLASTN	1254	1e-103	93
612	8	700475734H1	SATMON025	g1532072	BLASTN	1256	1e-103	99
613	8	700028218H1	SATMON003	g1532072	BLASTN	1275	1e-103	100
614	8	700088644H1	SATMON011	g1532072	BLASTN	1351	1e-103	98
615	8	700378768H1	SATMON020	g1532072	BLASTN	1067	1e-102	98
616	8	LIB3067-035-Q1-K1-H10	LIB3067	g1532072	BLASTN	1233	1e-102	95
617	8	700043466H1	SATMON004	g1532072	BLASTN	1331	1e-102	97
618	8	LIB148-057-Q1-E1-C3	LIB148	g1532072	BLASTN	1283	1e-101	92
619	8	700217574H1	SATMON016	g1532072	BLASTN	1320	1e-101	100
620	8	700042332H1	SATMON004	g1532072	BLASTN	1321	1e-101	97
621	8	700440926H1	SATMON026	g1532072	BLASTN	1323	1e-101	99
622	8	700552284H1	SATMON022	g1532072	BLASTN	1329	1e-101	97
623	8	700216613H1	SATMON016	g1532072	BLASTN	689	1e-100	97
624	8	LIB3067-054-Q1-K1-F6	LIB3067	g1532072	BLASTN	1030	1e-100	94
625	8	LIB3060-038-Q1-K1-B9	LIB3060	g1532072	BLASTN	1108	1e-100	92
626	8	700218755H1	SATMON011	g1532072	BLASTN	1116	1e-100	99
627	8	700338042H1	SATMON020	g1532072	BLASTN	1270	1e-100	99
628	8	700268009H1	SATMON017	g1532072	BLASTN	1307	1e-100	92
629	8	700578491H1	SATMON031	g1532072	BLASTN	1309	1e-100	97
630	8	700030037H1	SATMON003	g1532072	BLASTN	1310	1e-100	97
631	8	700221406H1	SATMON011	g1532072	BLASTN	1315	1e-100	100
632	8	700157357H1	SATMON012	g1532072	BLASTN	1315	1e-100	98
633	8	700476926H1	SATMON025	g1532072	BLASTN	680	1e-99	97
634	8	700475068H1	SATMON025	g1532072	BLASTN	792	1e-99	98
635	8	700469741H1	SATMON025	g1532072	BLASTN	831	1e-99	99
636	8	700082377H1	SATMON011	g1532072	BLASTN	1081	1e-99	99
637	8	700217143H1	SATMON016	g1532072	BLASTN	1208	1e-99	98
638	8	700339433H1	SATMON020	g1532072	BLASTN	1295	1e-99	100
639	8	700196627H1	SATMON014	g1532072	BLASTN	1295	1e-99	100
640	8	700259354H1	SATMON017	g1532072	BLASTN	1305	1e-99	92
641	8	700610842H1	SATMON022	g1532072	BLASTN	843	1e-98	97
642	8	700218059H1	SATMON016	g1532072	BLASTN	1036	1e-98	99
643	8	700421727H1	SATMONN01	g1532072	BLASTN	1172	1e-98	97
644	8	700158660H1	SATMON012	g1532072	BLASTN	1285	1e-98	100
645	8	700806856H1	SATMON036	g1532072	BLASTN	1194	1e-97	97
646	8	700583512H1	SATMON031	g1532072	BLASTN	1219	1e-97	97
647	8	700025502H1	SATMON004	g1532072	BLASTN	1276	1e-97	99
648	8	700159562H1	SATMON012	g1532072	BLASTN	1277	1e-97	99
649	8	700223731H1	SATMON011	g1532072	BLASTN	1277	1e-97	99
650	8	700156494H1	SATMON012	g1532072	BLASTN	1280	1e-97	100
651	8	700160533H1	SATMON012	g1532072	BLASTN	1281	1e-97	97
652	8	LIB3066-055-Q1-K1-D8	LIB3066	g1532072	BLASTN	672	1e-96	99
653	8	700405152H1	SATMON028	g1532072	BLASTN	828	1e-96	98
654	8	LIB148-040-Q1-E1-A8	LIB148	g1532072	BLASTN	1268	1e-96	83
655	8	700438437H1	SATMON026	g1532072	BLASTN	1246	1e-95	99
656	8	700267245H1	SATMON017	g1532072	BLASTN	1248	1e-95	93

657	8	700156129H2	SATMON007	g1532072	BLASTN	1250	1e-95	100
658	8	700203246H1	SATMON003	g1532072	BLASTN	1250	1e-95	100
659	8	700168339H1	SATMON013	g1532072	BLASTN	915	1e-94	98
660	8	LIB3067-036-Q1-K1-F9	LIB3067	g1532072	BLASTN	1110	1e-94	95
661	8	700193769H1	SATMON014	g1532072	BLASTN	1240	1e-94	100
662	8	700094014H1	SATMON008	g1532072	BLASTN	1241	1e-94	91
663	8	700020311H1	SATMON001	g1532072	BLASTN	1228	1e-93	99
664	8	700195083H1	SATMON014	g1532072	BLASTN	1229	1e-93	98
665	8	700193901H1	SATMON014	g1532072	BLASTN	1229	1e-93	98
666	8	700194639H1	SATMON014	g1532072	BLASTN	1231	1e-93	99
667	8	700350117H1	SATMON023	g1532072	BLASTN	1143	1e-92	99
668	8	700239867H1	SATMON010	g1532072	BLASTN	1210	1e-92	98
669	8	LIB3069-028-Q1-K1-D1	LIB3069	g1532072	BLASTN	1217	1e-92	94
670	8	700355756H1	SATMON024	g1532072	BLASTN	618	1e-91	96
671	8	700265492H1	SATMON017	g1532072	BLASTN	620	1e-91	94
672	8	700579021H1	SATMON031	g1532072	BLASTN	656	1e-91	96
673	8	LIB3079-015-Q1-K1-B11	LIB3079	g1532072	BLASTN	1008	1e-91	83
674	8	700572888H2	SATMON030	g1532072	BLASTN	1159	1e-91	99
675	8	701183990H1	SATMONN06	g1532072	BLASTN	1198	1e-91	93
676	8	700085757H1	SATMON011	g1532072	BLASTN	1200	1e-91	100
677	8	700162756H1	SATMON013	g1532072	BLASTN	1208	1e-91	99
678	8	700193076H1	SATMON014	g1532072	BLASTN	1208	1e-91	99
679	8	700224378H1	SATMON011	g1532072	BLASTN	696	1e-90	99
680	8	700218773H1	SATMON011	g1532072	BLASTN	1187	1e-90	93
681	8	700159338H1	SATMON012	g1532072	BLASTN	1193	1e-90	97
682	8	700169217H1	SATMON013	g1532072	BLASTN	1196	1e-90	99
683	8	700551548H1	SATMON022	g1532072	BLASTN	839	1e-89	96
684	8	700197059H1	SATMON014	g1532072	BLASTN	1025	1e-89	95
685	8	700469834H1	SATMON025	g1532072	BLASTN	650	1e-88	97
686	8	700569778H1	SATMON030	g1532072	BLASTN	682	1e-88	91
687	8	700194845H1	SATMON014	g1532072	BLASTN	1171	1e-88	99
688	8	700445861H1	SATMON027	g1532072	BLASTN	536	1e-87	99
689	8	700100536H1	SATMON009	g1532072	BLASTN	666	1e-87	94
690	8	701163801H1	SATMONN04	g1532072	BLASTN	805	1e-87	94
691	8	LIB3060-035-Q1-K1-E3	LIB3060	g1532072	BLASTN	922	1e-87	95
692	8	700170872H1	SATMON013	g1532072	BLASTN	943	1e-87	97
693	8	700241270H1	SATMON010	g1532072	BLASTN	1066	1e-86	96
694	8	700457981H1	SATMON029	g1532072	BLASTN	1140	1e-86	92
695	8	700158339H1	SATMON012	g1532072	BLASTN	1142	1e-86	99
696	8	700019442H1	SATMON001	g1532072	BLASTN	1145	1e-86	100
697	8	700149885H1	SATMON007	g1532072	BLASTN	1133	1e-85	99
698	8	700018255H1	SATMON001	g1532072	BLASTN	1135	1e-85	100
699	8	700244026H1	SATMON010	g1532072	BLASTN	1044	1e-84	89
700	8	LIB3060-027-Q1-K1-B2	LIB3060	g1532072	BLASTN	1117	1e-84	99
701	8	700170960H1	SATMON013	g1532072	BLASTN	696	1e-83	99
702	8	700267487H1	SATMON017	g1532072	BLASTN	1061	1e-83	92
703	8	700152754H1	SATMON007	g1532072	BLASTN	1107	1e-83	99
704	8	700378260H1	SATMON019	g1532072	BLASTN	1112	1e-83	92
705	8	700455089H1	SATMON029	g1532072	BLASTN	583	1e-82	97
706	8	700167322H1	SATMON013	g1532072	BLASTN	1080	1e-81	98
707	8	LIB3060-035-Q1-K1-H1	LIB3060	g1532072	BLASTN	782	1e-80	94
708	8	700204067H1	SATMON003	g1532072	BLASTN	1011	1e-80	98
709	8	700049271H1	SATMON003	g1532072	BLASTN	627	1e-79	93
710	8	700442065H1	SATMON026	g1532072	BLASTN	1043	1e-78	91

711	8	700244175H1	SATMON010	g1532072	BLASTN	1044	1e-78	90
712	8	700045296H1	SATMON004	g1532072	BLASTN	1041	1e-77	93
713	8	700578391H1	SATMON031	g1532072	BLASTN	624	1e-76	88
714	8	700346136H1	SATMON021	g1532072	BLASTN	751	1e-76	90
715	8	700457852H1	SATMON029	g1532072	BLASTN	777	1e-76	92
716	8	700570111H1	SATMON030	g1532072	BLASTN	814	1e-75	94
717	8	LIB3066-030-Q1-K1-A12	LIB3066	g1532072	BLASTN	922	1e-75	94
718	8	700149657H1	SATMON007	g1532072	BLASTN	1012	1e-75	92
719	8	LIB3060-043-Q1-K1-B4	LIB3060	g1532072	BLASTN	1013	1e-75	97
720	8	700156752H1	SATMON012	g1532072	BLASTN	1013	1e-75	98
721	8	700454114H1	SATMON029	g1532072	BLASTN	455	1e-74	93
722	8	LIB143-053-Q1-E1-E8	LIB143	g1532072	BLASTN	672	1e-74	98
723	8	700029323H1	SATMON003	g1532072	BLASTN	996	1e-74	99
724	8	700156381H1	SATMON007	g1532072	BLASTN	1002	1e-74	97
725	8	700159603H2	SATMON012	g1532072	BLASTN	1003	1e-74	94
726	8	LIB3060-035-Q1-K1-E5	LIB3060	g1532072	BLASTN	603	1e-72	94
727	8	LIB3069-025-Q1-K1-E12	LIB3069	g1532072	BLASTN	734	1e-72	90
728	8	700166680H1	SATMON013	g1532072	BLASTN	971	1e-72	99
729	8	700171123H1	SATMON013	g1532072	BLASTN	973	1e-72	94
730	8	LIB148-042-Q1-E1-G10	LIB148	g1532072	BLASTN	975	1e-72	100
731	8	700612951H1	SATMON033	g1532072	BLASTN	401	1e-71	96
732	8	700265213H1	SATMON017	g1532072	BLASTN	626	1e-71	92
733	8	LIB189-030-Q1-E1-D11	LIB189	g1532072	BLASTN	740	1e-70	92
734	8	700212877H1	SATMON016	g1532072	BLASTN	918	1e-70	93
735	8	700161545H1	SATMON012	g1532072	BLASTN	621	1e-69	99
736	8	700021259H1	SATMON001	g1532072	BLASTN	940	1e-69	93
737	8	LIB3079-015-Q1-K1-C7	LIB3079	g1532072	BLASTN	508	1e-68	96
738	8	LIB3066-055-Q1-K1-F11	LIB3066	g1532072	BLASTN	832	1e-68	85
739	8	700166771H1	SATMON013	g1532072	BLASTN	922	1e-68	88
740	8	LIB3066-003-Q1-K1-E6	LIB3066	g1532072	BLASTN	927	1e-68	86
741	8	700208131H1	SATMON016	g1532047	BLASTN	747	1e-66	85
742	8	700020688H1	SATMON001	g1532072	BLASTN	905	1e-66	90
743	8	700206405H1	SATMON003	g1532072	BLASTN	905	1e-66	100
744	8	LIB3069-042-Q1-K1-C5	LIB3069	g1532072	BLASTN	891	1e-65	99
745	8	700353835H1	SATMON024	g1532072	BLASTN	896	1e-65	96
746	8	700471533H1	SATMON025	g1532072	BLASTN	496	1e-63	99
747	8	700165425H1	SATMON013	g1532072	BLASTN	850	1e-62	100
748	8	LIB3069-054-Q1-K1-C4	LIB3069	g1532072	BLASTN	613	1e-60	87
749	8	700160896H1	SATMON012	g1532072	BLASTN	746	1e-60	95
750	8	LIB3069-042-Q1-K1-A11	LIB3069	g1532072	BLASTN	840	1e-60	98
751	8	700466625H1	SATMON025	g1532072	BLASTN	635	1e-59	86
752	8	700571770H1	SATMON030	g1532072	BLASTN	820	1e-59	84
753	8	LIB143-024-Q1-E1-D2	LIB143	g1532072	BLASTN	813	1e-58	95
754	8	700453677H1	SATMON028	g1532072	BLASTN	508	1e-57	92
755	8	700193979H1	SATMON014	g1532072	BLASTN	790	1e-57	100
756	8	700467828H1	SATMON025	g1532072	BLASTN	779	1e-56	96
757	8	700150072H1	SATMON007	g1532072	BLASTN	776	1e-55	99
758	8	700802869H1	SATMON036	g1532072	BLASTN	702	1e-54	95
759	8	LIB148-051-Q1-E1-B12	LIB148	g1532072	BLASTN	421	1e-53	92
760	8	700075035H1	SATMON007	g1532072	BLASTN	506	1e-53	93
761	8	700471283H1	SATMON025	g1532072	BLASTN	742	1e-53	91
762	8	700166625H1	SATMON013	g1532072	BLASTN	748	1e-53	99
763	8	700019894H1	SATMON001	g1532072	BLASTN	643	1e-51	89
764	8	700204863H1	SATMON003	g1532072	BLASTN	721	1e-51	99

765	8	700431071H1	SATMONN01	g1532072	BLASTN	366	1e-50	94
766	8	700171582H1	SATMON013	g1532072	BLASTN	492	1e-50	99
767	8	700450579H1	SATMON028	g1532072	BLASTN	338	1e-49	97
768	8	700084149H1	SATMON011	g1532072	BLASTN	672	1e-47	98
769	8	700095070H1	SATMON008	g1532072	BLASTN	662	1e-46	98
770	8	700570827H1	SATMON030	g1532072	BLASTN	344	1e-44	83
771	8	LIB3061-057-Q1-K1-G12	LIB3061	g1532072	BLASTN	378	1e-43	75
772	8	700194918H1	SATMON014	g1532072	BLASTN	626	1e-43	89
773	8	700378894H1	SATMON020	g1532072	BLASTN	495	1e-42	97
774	8	700468029H1	SATMON025	g1532072	BLASTN	616	1e-42	98
775	8	LIB143-012-Q1-E1-H8	LIB143	g1532072	BLASTN	637	1e-42	98
776	8	LIB3060-037-Q1-K1-H4	LIB3060	g1532072	BLASTN	638	1e-42	86
777	8	700433327H1	SATMONN01	g1532072	BLASTN	365	1e-41	86
778	8	700623611H1	SATMON034	g1532072	BLASTN	316	1e-39	95
779	8	700166123H1	SATMON013	g1532072	BLASTN	585	1e-39	100
780	8	700616273H1	SATMON033	g1532072	BLASTN	534	1e-38	98
781	8	700464702H1	SATMON025	g1532072	BLASTN	566	1e-38	99
782	8	700338809H1	SATMON020	g1532072	BLASTN	550	1e-37	100
783	8	700092622H1	SATMON008	g1532072	BLASTN	561	1e-37	99
784	8	LIB3060-043-Q1-K1-A10	LIB3060	g1532072	BLASTN	352	1e-36	93
785	8	700265611H1	SATMON017	g1532072	BLASTN	548	1e-36	95
786	8	700100319H1	SATMON009	g1532072	BLASTN	552	1e-36	98
787	8	700092696H1	SATMON008	g1532072	BLASTN	552	1e-36	98
788	8	700076750H1	SATMON007	g1532072	BLASTN	526	1e-35	99
789	8	700082896H1	SATMON011	g1532072	BLASTN	526	1e-35	99
790	8	700075411H1	SATMON007	g1532072	BLASTN	319	1e-34	91
791	8	701178051H1	SATMONN05	g1532072	BLASTN	342	1e-34	94
792	8	700266358H1	SATMON017	g1532072	BLASTN	520	1e-34	95
793	8	700453981H1	SATMON029	g1532072	BLASTN	505	1e-33	96
794	8	700584238H1	SATMON031	g1532072	BLASTN	509	1e-33	91
795	8	700103871H1	SATMON010	g1532072	BLASTN	491	1e-32	99
796	8	700264460H1	SATMON017	g1532072	BLASTN	495	1e-32	95
797	8	700205122H1	SATMON003	g1532072	BLASTN	501	1e-32	99
798	8	700165768H1	SATMON013	g1532072	BLASTN	420	1e-31	98
799	8	700077179H1	SATMON007	g1532072	BLASTN	471	1e-30	98
800	8	700476654H1	SATMON025	g1532072	BLASTN	476	1e-30	98
801	8	700027374H1	SATMON003	g1532072	BLASTN	476	1e-30	98
802	8	700266994H1	SATMON017	g1532072	BLASTN	476	1e-30	98
803	8	700088193H1	SATMON011	g1532072	BLASTN	488	1e-30	97
804	8	700214511H1	SATMON016	g1532072	BLASTN	298	1e-29	93
805	8	700257186H1	SATMON017	g1532072	BLASTN	465	1e-29	95
806	8	700335814H1	SATMON019	g1532072	BLASTN	469	1e-29	93
807	8	700236166H1	SATMON010	g1532072	BLASTN	450	1e-28	95
808	8	700468243H1	SATMON025	g1532072	BLASTN	456	1e-28	98
809	8	700096327H1	SATMON008	g1532072	BLASTN	451	1e-27	98
810	8	700471139H1	SATMON025	g1532072	BLASTN	451	1e-27	98
811	8	700050420H1	SATMON003	g1532072	BLASTN	365	1e-26	92
812	8	700264846H1	SATMON017	g1532072	BLASTN	430	1e-25	94
813	8	700266803H1	SATMON017	g1532072	BLASTN	293	1e-24	75
814	8	700086134H1	SATMON011	g1532072	BLASTN	422	1e-24	97
815	8	700162001H1	SATMON012	g1532072	BLASTN	279	1e-23	96
816	8	700044825H1	SATMON004	g1532072	BLASTN	411	1e-23	98
817	8	700074679H1	SATMON007	g1532072	BLASTN	411	1e-23	98
818	8	700267694H1	SATMON017	g1532072	BLASTN	320	1e-22	92

819	8	700267990H1	SATMON017	g1532072	BLASTN	361	1e-22	99
820	8	700456715H1	SATMON029	g1532072	BLASTN	293	1e-21	97
821	8	700454806H1	SATMON029	g1532072	BLASTN	356	1e-21	98
822	8	700466812H1	SATMON025	g1532072	BLASTN	380	1e-21	95
823	8	700046476H1	SATMON004	g1532072	BLASTN	381	1e-21	97
824	8	700207160H1	SATMON017	g1532072	BLASTN	393	1e-21	96
825	8	700383037H1	SATMON024	g1532072	BLASTN	280	1e-20	98
826	8	700549660H1	SATMON022	g1532072	BLASTN	376	1e-20	97
827	8	LIB3066-004-Q1-K1-G12	LIB3066	g1532072	BLASTN	379	1e-20	91
828	8	700801422H1	SATMON036	g1532072	BLASTN	321	1e-19	97
829	8	700045319H1	SATMON004	g1532072	BLASTN	336	1e-17	99
830	8	700046047H1	SATMON004	g1532072	BLASTN	336	1e-17	99
831	8	700264328H1	SATMON017	g1532072	BLASTN	339	1e-17	95
832	8	700083485H1	SATMON011	g1532072	BLASTN	341	1e-17	99
833	8	700461268H1	SATMON033	g1532072	BLASTN	342	1e-17	95
834	8	700053271H1	SATMON008	g1532072	BLASTN	311	1e-15	98
835	8	700215275H1	SATMON016	g1532072	BLASTN	321	1e-15	98
836	8	700623133H1	SATMON034	g1532072	BLASTN	275	1e-14	75
837	8	700454949H1	SATMON029	g1532072	BLASTN	280	1e-14	99
838	8	700440763H1	SATMON026	g1532072	BLASTN	307	1e-14	95
839	8	LIB3068-022-Q1-K1-C4	LIB3068	g1532072	BLASTN	150	1e-12	94
840	8	700798849H1	SATMON036	g1532072	BLASTN	281	1e-12	98
841	8	700333057H1	SATMON019	g1532072	BLASTN	184	1e-11	91
842	8	700265786H1	SATMON017	g1532072	BLASTN	200	1e-11	90
843	8	700193030H1	SATMON014	g1532072	BLASTN	158	1e-9	94
844	8	700262964H1	SATMON017	g1532047	BLASTN	171	1e-9	81
845	8	LIB3069-023-Q1-K1-B2	LIB3069	g1403043	BLASTN	195	1e-9	84
846	8	700474096H1	SATMON025	g1532072	BLASTN	199	1e-9	97
847	8	700028326H1	SATMON003	g1532072	BLASTN	151	1e-8	96
848	8011	700440327H1	SATMON026	g1532047	BLASTN	292	1e-14	85
849	851	LIB3059-052-Q1-K1-E6	LIB3059	g1403043	BLASTN	1033	1e-85	75
850	851	700090958H1	SATMON011	g1532072	BLASTN	1044	1e-78	80
851	851	700224605H1	SATMON011	g1532072	BLASTN	850	1e-62	80
852	851	700551562H1	SATMON022	g1403043	BLASTN	374	1e-55	79
853	851	700153939H1	SATMON007	g1403043	BLASTN	772	1e-55	80
854	851	700469231H1	SATMON025	g1532072	BLASTN	560	1e-52	76
855	851	700349854H1	SATMON023	g1403043	BLASTN	669	1e-46	81
856	851	701169324H1	SATMONN05	g1403043	BLASTN	669	1e-46	78
857	851	700088319H1	SATMON011	g1532072	BLASTN	492	1e-30	78
2480	-700998660	700998660H1	SOYMON018	g1531764	BLASTN	249	1e-29	90
2481	-GM927	LIB3028-005-Q1-B1-B4	LIB3028	g1421750	BLASTN	261	1e-10	80
2482	13379	700842514H1	SOYMON020	g1915980	BLASTN	575	1e-41	73
2483	13379	701042786H1	SOYMON029	g1421750	BLASTN	377	1e-20	80
2484	15556	701101584H1	SOYMON028	g1421750	BLASTN	526	1e-35	69
2485	15556	701099749H1	SOYMON028	g1155239	BLASTN	453	1e-27	72
2486	16	LIB3051-018-Q1-E1-A7	LIB3051	g1421750	BLASTN	1146	1e-93	81
2487	16	LIB3056-005-Q1-N1-E10	LIB3056	g1421750	BLASTN	944	1e-88	80
2488	16	LIB3051-101-Q1-K1-C7	LIB3051	g1421750	BLASTN	1135	1e-85	80
2489	16	LIB3056-001-Q1-B1-H12	LIB3056	g1421750	BLASTN	752	1e-82	81
2490	16	700661334H1	SOYMON005	g1421750	BLASTN	1092	1e-82	80
2491	16	LIB3056-012-Q1-N1-B12	LIB3056	g1421750	BLASTN	1085	1e-81	80
2492	16	LIB3055-011-Q1-N1-G2	LIB3055	g1421750	BLASTN	958	1e-78	79
2493	16	700663981H1	SOYMON005	g1421750	BLASTN	996	1e-74	82
2494	16	701109737H1	SOYMON036	g1421750	BLASTN	955	1e-70	83

2495	16	701130190H1	SOYMON037	g1421750	BLASTN	935	1e-69	81
2496	16	701003301H1	SOYMON019	g1421750	BLASTN	412	1e-68	82
2497	16	700894137H1	SOYMON024	g1421750	BLASTN	923	1e-68	84
2498	16	700980096H1	SOYMON009	g1421750	BLASTN	923	1e-68	81
2499	16	700942625H1	SOYMON024	g1421750	BLASTN	911	1e-67	80
2500	16	700829695H1	SOYMON019	g1421750	BLASTN	918	1e-67	84
2501	16	700662572H1	SOYMON005	g1421750	BLASTN	920	1e-67	84
2502	16	701127647H1	SOYMON037	g1421750	BLASTN	902	1e-66	84
2503	16	701014550H1	SOYMON019	g1421750	BLASTN	556	1e-65	81
2504	16	LIB3051-043-Q1-K1-G3	LIB3051	g1421750	BLASTN	698	1e-65	82
2505	16	700730914H1	SOYMON009	g1421750	BLASTN	897	1e-65	84
2506	16	701052455H1	SOYMON032	g1421750	BLASTN	876	1e-64	81
2507	16	LIB3051-074-Q1-K1-A7	LIB3051	g1421750	BLASTN	876	1e-64	75
2508	16	700874839H1	SOYMON018	g1421750	BLASTN	862	1e-63	82
2509	16	701005943H1	SOYMON019	g1421750	BLASTN	865	1e-63	82
2510	16	700663357H1	SOYMON005	g1421750	BLASTN	869	1e-63	82
2511	16	701042053H1	SOYMON029	g1421750	BLASTN	872	1e-63	81
2512	16	700971988H1	SOYMON005	g1421750	BLASTN	508	1e-61	82
2513	16	701010728H1	SOYMON019	g1421750	BLASTN	657	1e-61	81
2514	16	700987206H1	SOYMON009	g1421750	BLASTN	845	1e-61	83
2515	16	701126773H1	SOYMON037	g1421750	BLASTN	847	1e-61	79
2516	16	700764714H1	SOYMON023	g1421750	BLASTN	830	1e-60	81
2517	16	700974444H1	SOYMON005	g1421750	BLASTN	830	1e-60	81
2518	16	701118620H1	SOYMON037	g1421750	BLASTN	832	1e-60	75
2519	16	700729926H1	SOYMON009	g1421750	BLASTN	834	1e-60	79
2520	16	700945142H1	SOYMON024	g1421750	BLASTN	470	1e-59	84
2521	16	700867912H1	SOYMON016	g1421750	BLASTN	820	1e-59	82
2522	16	700746546H1	SOYMON013	g1421750	BLASTN	824	1e-59	78
2523	16	700873331H1	SOYMON018	g1421750	BLASTN	769	1e-58	82
2524	16	700738212H1	SOYMON012	g1421750	BLASTN	780	1e-56	83
2525	16	700830454H1	SOYMON019	g1421750	BLASTN	789	1e-56	81
2526	16	700726129H1	SOYMON009	g1421750	BLASTN	789	1e-56	81
2527	16	700996774H1	SOYMON018	g1421750	BLASTN	486	1e-55	81
2528	16	700746427H1	SOYMON013	g1421750	BLASTN	766	1e-55	77
2529	16	701123911H1	SOYMON037	g1421750	BLASTN	769	1e-55	76
2530	16	700745730H1	SOYMON013	g1421750	BLASTN	775	1e-55	76
2531	16	700900940H1	SOYMON027	g1421750	BLASTN	760	1e-54	78
2532	16	700846419H1	SOYMON021	g1421750	BLASTN	762	1e-54	78
2533	16	701203427H1	SOYMON035	g1421750	BLASTN	491	1e-53	84
2534	16	LIB3051-074-Q1-K1-F5	LIB3051	g1421750	BLASTN	650	1e-53	75
2535	16	700747646H1	SOYMON013	g1421750	BLASTN	747	1e-53	77
2536	16	701049823H1	SOYMON032	g1421750	BLASTN	751	1e-53	77
2537	16	701049188H1	SOYMON032	g1421750	BLASTN	731	1e-52	75
2538	16	700875156H1	SOYMON018	g1421750	BLASTN	737	1e-52	78
2539	16	700864540H1	SOYMON016	g1421750	BLASTN	741	1e-52	81
2540	16	700682329H2	SOYMON008	g1421750	BLASTN	719	1e-51	76
2541	16	700846215H1	SOYMON021	g1421750	BLASTN	575	1e-50	82
2542	16	701101327H1	SOYMON028	g1421750	BLASTN	592	1e-50	77
2543	16	LIB3055-011-Q1-N1-E7	LIB3055	g1421750	BLASTN	680	1e-50	80
2544	16	700848992H1	SOYMON021	g1421750	BLASTN	708	1e-50	76
2545	16	700966820H1	SOYMON028	g1421750	BLASTN	710	1e-50	75
2546	16	701051785H1	SOYMON032	g1421750	BLASTN	717	1e-50	75
2547	16	700681079H1	SOYMON008	g1917012	BLASTN	290	1e-49	77
2548	16	701138880H1	SOYMON038	g1421750	BLASTN	610	1e-49	78

2549	16	700872967H1	SOYMON018	g1421750	BLASTN	704	1e-49	75
2550	16	701119960H1	SOYMON037	g1421750	BLASTN	684	1e-48	81
2551	16	700873306H1	SOYMON018	g1421750	BLASTN	693	1e-48	83
2552	16	700751484H1	SOYMON014	g1421750	BLASTN	635	1e-47	82
2553	16	700958865H1	SOYMON022	g1421750	BLASTN	486	1e-46	82
2554	16	700872833H1	SOYMON018	g1421750	BLASTN	659	1e-46	84
2555	16	700871673H1	SOYMON018	g1421750	BLASTN	659	1e-46	84
2556	16	700872801H1	SOYMON018	g1421750	BLASTN	659	1e-46	84
2557	16	700847572H1	SOYMON021	g1421750	BLASTN	660	1e-46	75
2558	16	700728046H1	SOYMON009	g1421750	BLASTN	661	1e-46	84
2559	16	700894721H1	SOYMON024	g1421750	BLASTN	550	1e-43	84
2560	16	700730946H1	SOYMON009	g1421750	BLASTN	307	1e-42	77
2561	16	700727943H1	SOYMON009	g1421750	BLASTN	378	1e-42	79
2562	16	701101238H1	SOYMON028	g1421750	BLASTN	456	1e-42	92
2563	16	700758519H1	SOYMON015	g1421750	BLASTN	358	1e-41	77
2564	16	700740343H1	SOYMON012	g1531764	BLASTN	607	1e-41	72
2565	16	700848076H1	SOYMON021	g1531764	BLASTN	469	1e-40	89
2566	16	LIB3051-080-Q1-K1-H7	LIB3051	g1531764	BLASTN	472	1e-38	90
2567	16	700955916H1	SOYMON022	g1531764	BLASTN	427	1e-37	90
2568	16	700873876H1	SOYMON018	g1421750	BLASTN	465	1e-37	80
2569	16	700746271H1	SOYMON013	g1421750	BLASTN	515	1e-37	80
2570	16	700662887H1	SOYMON005	g1421750	BLASTN	506	1e-35	82
2571	16	700983591H1	SOYMON009	g1421750	BLASTN	537	1e-35	82
2572	16	700752343H1	SOYMON014	g1421750	BLASTN	488	1e-34	73
2573	16	700901973H1	SOYMON027	g1421750	BLASTN	490	1e-34	82
2574	16	LIB3053-013-Q1-N1-B11	LIB3053	g1421750	BLASTN	522	1e-34	75
2575	16	700988481H1	SOYMON009	g1421750	BLASTN	506	1e-33	78
2576	16	LIB3051-078-Q1-K1-C12	LIB3051	g1421750	BLASTN	302	1e-32	75
2577	16	700985640H1	SOYMON009	g1421750	BLASTN	449	1e-30	86
2578	16	701127038H1	SOYMON037	g1421750	BLASTN	467	1e-30	67
2579	16	700898677H1	SOYMON027	g1531764	BLASTN	474	1e-30	89
2580	16	700742260H1	SOYMON012	g1421750	BLASTN	476	1e-30	70
2581	16	701103203H1	SOYMON028	g1421750	BLASTN	287	1e-27	81
2582	16	700897144H1	SOYMON027	g1421750	BLASTN	264	1e-26	75
2583	16	700832039H1	SOYMON019	g1421750	BLASTN	390	1e-26	82
2584	16	700743311H1	SOYMON012	g1421750	BLASTN	429	1e-26	87
2585	16	LIB3040-044-Q1-E1-B8	LIB3040	g1421750	BLASTN	282	1e-25	92
2586	16	LIB3051-024-Q1-K1-C4	LIB3051	g2394382	BLASTX	110	1e-24	95
2587	16	701011765H1	SOYMON019	g1421750	BLASTN	383	1e-21	76
2588	16	700893428H1	SOYMON024	g1421752	BLASTX	106	1e-20	82
2589	16	700996204H1	SOYMON018	g1421750	BLASTN	288	1e-20	75
2590	16	LIB3049-028-Q1-E1-C6	LIB3049	g1421750	BLASTN	230	1e-19	90
2591	16	701103628H1	SOYMON028	g1421750	BLASTN	277	1e-18	73
2592	16	700972636H1	SOYMON005	g1421750	BLASTN	286	1e-16	73
2593	16	700875417H1	SOYMON018	g1421750	BLASTN	209	1e-15	75
2594	16	701207702H1	SOYMON035	g1421752	BLASTX	153	1e-14	83
2595	16	701054556H1	SOYMON032	g1421750	BLASTN	230	1e-14	75
2596	16	701046407H1	SOYMON032	g1421750	BLASTN	230	1e-14	75
2597	16	701117634H1	SOYMON037	g1421750	BLASTN	230	1e-14	74
2598	16	701127714H1	SOYMON037	g1421750	BLASTN	230	1e-14	75
2599	16	700663239H1	SOYMON005	g1421750	BLASTN	210	1e-13	74
2600	16	700738510H1	SOYMON012	g1421750	BLASTN	212	1e-13	72
2601	16	700943559H1	SOYMON024	g1421750	BLASTN	215	1e-13	71
2602	16	700666278H1	SOYMON005	g1421750	BLASTN	290	1e-13	93

2603	16	700663144H1	SOYMON005	g1421750	BLASTN	204	1e-12	74
2604	16	700684147H1	SOYMON008	g1421750	BLASTN	278	1e-12	89
2605	16	700953076H1	SOYMON022	g1421750	BLASTN	285	1e-12	92
2606	16	701099931H1	SOYMON028	g1421750	BLASTN	202	1e-11	72
2607	16	701058910H1	SOYMON033	g1421750	BLASTN	216	1e-11	74
2608	16	700754949H1	SOYMON014	g1421750	BLASTN	266	1e-11	89
2609	16	700562967H1	SOYMON002	g1421750	BLASTN	266	1e-11	82
2610	16	701012790H1	SOYMON019	g1421750	BLASTN	251	1e-10	89
2611	16	701101739H1	SOYMON028	g1421750	BLASTN	260	1e-10	82
2612	16	701118211H1	SOYMON037	g1490554	BLASTX	97	1e-9	47
2613	16	700844394H1	SOYMON021	g1917013	BLASTX	116	1e-9	85
2614	16	701048560H1	SOYMON032	g1421750	BLASTN	198	1e-9	79
2615	16	701062373H1	SOYMON033	g1421750	BLASTN	203	1e-9	71
2616	16	701120496H1	SOYMON037	g1421750	BLASTN	230	1e-9	82
2617	16	701049680H1	SOYMON032	g1421750	BLASTN	177	1e-8	70
2618	16	700748760H1	SOYMON013	g1421750	BLASTN	230	1e-8	91
2619	16	700889482H1	SOYMON024	g1421750	BLASTN	235	1e-8	91
2620	16	700725013H1	SOYMON009	g1421750	BLASTN	239	1e-8	85
2621	16048	LIB3028-004-Q1-B1-E2	LIB3028	g1421750	BLASTN	879	1e-64	68
2622	16048	700761667H1	SOYMON015	g1421750	BLASTN	528	1e-35	71
2623	16048	700958003H1	SOYMON022	g1421750	BLASTN	428	1e-26	78

ASPARTATE KINASE (EC 2.7.2.4)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
858	-700018870	700018870H1	SATMON001	g500850	BLASTN	1095	1e-82	100
859	-700085903	700085903H1	SATMON011	g500852	BLASTN	1606	1e-124	99
860	-700086169	700086169H1	SATMON011	g500852	BLASTN	559	1e-94	92
861	-700096679	700096679H1	SATMON008	g500850	BLASTN	1131	1e-85	99
862	-700096794	700096794H1	SATMON008	g500850	BLASTN	1515	1e-117	100
863	-700106390	700106390H1	SATMON010	g2243115	BLASTN	544	1e-51	72
864	-700168286	700168286H1	SATMON013	g2243115	BLASTN	519	1e-34	72
865	-700171363	700171363H1	SATMON013	g500850	BLASTN	1085	1e-81	94
866	-700194781	700194781H1	SATMON014	g2257742	BLASTN	635	1e-44	79
867	-700213839	700213839H1	SATMON016	g500850	BLASTN	664	1e-75	94
868	-700219756	700219756H1	SATMON011	g500850	BLASTN	1359	1e-104	99
869	-700258808	700258808H1	SATMON017	g500850	BLASTN	630	1e-85	96
870	-700263439	700263439H1	SATMON017	g2243115	BLASTN	448	1e-43	76
871	-700266615	700266615H1	SATMON017	g2243116	BLASTX	179	1e-17	73
872	-700342655	700342655H1	SATMON021	g2257743	BLASTX	213	1e-22	82
873	-700343285	700343285H1	SATMON021	g2257742	BLASTN	437	1e-25	66
874	-700467533	700467533H1	SATMON025	g2243115	BLASTN	439	1e-26	79
875	-700548678	700548678H1	SATMON022	g147979	BLASTX	147	1e-13	62
876	-700613618	700613618H1	SATMON033	g500850	BLASTN	965	1e-81	98
877	-L30691987	LIB3069-018-Q1-K1-A3	LIB3069	g2243115	BLASTN	266	1e-10	57
878	12201	700457103H1	SATMON029	g2257742	BLASTN	789	1e-56	76
879	12201	700457111H1	SATMON029	g2243115	BLASTN	513	1e-33	76
880	12931	700380864H1	SATMON023	g500852	BLASTN	1450	1e-111	95
881	12931	700105610H1	SATMON010	g500852	BLASTN	1046	1e-105	95
882	12931	700380848H1	SATMON023	g500852	BLASTN	1193	1e-96	95
883	12931	700205392H1	SATMON003	g500852	BLASTN	1065	1e-94	93
884	12931	700552314H1	SATMON022	g500852	BLASTN	908	1e-86	90
885	12931	700551915H1	SATMON022	g500852	BLASTN	1090	1e-81	90

886	16037	700344509H1	SATMON021	g500852	BLASTN	1184	1e-89	92
887	16037	700345170H1	SATMON021	g500852	BLASTN	600	1e-58	85
888	16157	700212607H1	SATMON016	g2243115	BLASTN	914	1e-67	76
889	16157	700094809H1	SATMON008	g2243116	BLASTX	144	1e-12	84
890	19231	700091761H1	SATMON011	g500850	BLASTN	1358	1e-104	98
891	19231	700612568H1	SATMON033	g500850	BLASTN	1137	1e-102	99
892	22303	700553291H1	SATMON022	g2243115	BLASTN	644	1e-44	70
893	22303	700553382H1	SATMON022	g2243115	BLASTN	418	1e-39	70
894	28000	LIB143-061-Q1-E1-C7	LIB143	g2243115	BLASTN	1132	1e-85	75
895	28000	700474110H1	SATMON025	g2243115	BLASTN	509	1e-33	75
896	30401	700620948H1	SATMON034	g500852	BLASTN	327	1e-30	88
897	32907	LIB143-038-Q1-E1-B11	LIB143	g500850	BLASTN	1864	1e-146	96
898	32907	700096779H1	SATMON008	g500850	BLASTN	1490	1e-115	97
899	5616	700346488H1	SATMON021	g2243115	BLASTN	664	1e-46	71
900	5616	700196138H1	SATMON014	g2243115	BLASTN	630	1e-43	74
2624	-700556108	700556108H1	SOYMON001	g2243115	BLASTN	700	1e-49	74
2625	-700663367	700663367H1	SOYMON005	g2243115	BLASTN	737	1e-52	77
2626	-700733301	700733301H1	SOYMON010	g2243115	BLASTN	751	1e-53	78
2627	-700747979	700747979H1	SOYMON013	g2257742	BLASTN	449	1e-27	70
2628	-700832664	700832664H1	SOYMON019	g167547	BLASTN	322	1e-44	78
2629	-700843925	700843925H1	SOYMON021	g167547	BLASTN	616	1e-42	71
2630	-700888516	700888516H1	SOYMON024	g464225	BLASTX	193	1e-19	78
2631	-700892002	700892002H1	SOYMON024	g2243115	BLASTN	363	1e-21	79
2632	-700959057	700959057H1	SOYMON022	g2257742	BLASTN	497	1e-32	72
2633	-700971891	700971891H1	SOYMON005	g167547	BLASTN	699	1e-49	74
2634	-700984812	700984812H1	SOYMON009	g2257742	BLASTN	801	1e-57	77
2635	-701069254	701069254H1	SOYMON034	g2243115	BLASTN	260	1e-23	75
2636	-701120341	701120341H1	SOYMON037	g2243115	BLASTN	567	1e-38	77
2637	-GM35173	LIB3051-037-Q1-K1-B9	LIB3051	g2970554	BLASTN	193	1e-11	83
2638	15020	700557507H1	SOYMON001	g167547	BLASTN	914	1e-67	79
2639	15020	700666142H1	SOYMON005	g1107460	BLASTN	767	1e-55	77
2640	18237	700797368H1	SOYMON017	g2257742	BLASTN	819	1e-59	81
2641	18237	700797360H1	SOYMON017	g2257742	BLASTN	809	1e-58	84
2642	19332	LIB3056-004-Q1-N1-D5	LIB3056	g2243115	BLASTN	1118	1e-84	74
2643	19332	700786255H2	SOYMON011	g2257742	BLASTN	626	1e-43	72
2644	19332	700684751H1	SOYMON008	g2257742	BLASTN	583	1e-39	73
2645	21954	701100440H1	SOYMON028	g167547	BLASTN	835	1e-60	78
2646	21954	701059173H1	SOYMON033	g167547	BLASTN	719	1e-51	75
2647	26336	701003103H1	SOYMON019	g2243115	BLASTN	877	1e-64	79
2648	26336	700976874H1	SOYMON009	g2243115	BLASTN	880	1e-64	79

ASPARTATE-SEMIALDEHYDE DEHYDROGENASE (EC 1.2.1.11)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
901	-700439614	700439614H1	SATMON026	g2314350	BLASTX	107	1e-13	52
902	-701183695	701183695H1	SATMONN06	g289910	BLASTX	150	1e-13	69
903	-L1487398	LIB148-064-Q1-E1-D10	LIB148	g1749466	BLASTX	178	1e-33	55
904	-L30622830	LIB3062-028-Q1-K1-A8	LIB3062	g1085109	BLASTX	108	1e-40	48
2649	-700756763	700756763H1	SOYMON014	g1359593	BLASTX	71	1e-8	52
2650	-700830054	700830054H1	SOYMON019	g142828	BLASTX	87	1e-10	41
2651	-701105617	701105617H1	SOYMON036	g142828	BLASTX	215	1e-22	57
2652	-GM8539	LIB3039-047-Q1-E1-C6	LIB3039	g142828	BLASTX	188	1e-35	50
2653	30187	LIB3049-001-Q1-E1-F2	LIB3049	g1359593	BLASTX	136	1e-26	54

2654	30187	700556105H1	SOYMON001	g1359593	BLASTX	132	1e-11	56

O-SUCCINYLHOMOSERINE (THIOL)-LYASE (EC 4.2.99.9)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
905	-700049526	700049526H1	SATMON003	g2198852	BLASTN	251	1e-9	76
906	-700086788	700086788H1	SATMON011	g2198850	BLASTN	631	1e-61	88
907	-700460589	700460589H1	SATMON030	g2198850	BLASTN	251	1e-32	83
908	-700577561	700577561H1	SATMON031	g2198852	BLASTN	207	1e-15	82
909	-700579840	700579840H1	SATMON031	g2198850	BLASTN	216	1e-12	94
910	-700616013	700616013H1	SATMON033	g2198852	BLASTN	278	1e-39	81
911	-L1892785	LIB189-011-Q1-E1-A10	LIB189	g2198852	BLASTN	311	1e-14	82
912	-L30594402	LIB3059-042-Q1-K1-E11	LIB3059	g2198852	BLASTN	489	1e-40	84
913	-L30604293	LIB3060-028-Q1-K1-E7	LIB3060	g2198852	BLASTN	380	1e-20	83
914	-L30693289	LIB3069-016-Q1-K1-G10	LIB3069	g2198852	BLASTN	197	1e-10	79
915	10571	700224881H1	SATMON011	g2198852	BLASTN	319	1e-15	75
916	10801	700429049H1	SATMONN01	g2198852	BLASTN	210	1e-16	82
917	10801	700167813H1	SATMON013	g2198852	BLASTN	200	1e-15	82
918	10801	700074027H1	SATMON007	g2198852	BLASTN	178	1e-11	80
919	16379	LIB3061-035-Q1-K1-B6	LIB3061	g2198850	BLASTN	2184	1e-173	99
920	16379	700259309H1	SATMON017	g2198850	BLASTN	1259	1e-108	92
921	16379	700051696H1	SATMON003	g2198850	BLASTN	1392	1e-107	96
922	16379	700239553H1	SATMON010	g2198850	BLASTN	1265	1e-96	96
923	16379	700042846H1	SATMON004	g2198850	BLASTN	1208	1e-91	95
924	16379	700092741H1	SATMON008	g2198850	BLASTN	1042	1e-89	95
925	16379	LIB3061-017-Q1-K1-D7	LIB3061	g2198850	BLASTN	1183	1e-89	99
926	16379	700206765H1	SATMON003	g2198850	BLASTN	1095	1e-82	81
927	16379	700150281H1	SATMON007	g2198850	BLASTN	1024	1e-76	94
928	16379	700165862H1	SATMON013	g2198850	BLASTN	948	1e-75	94
929	2221	LIB3060-017-Q1-K1-B10	LIB3060	g2198850	BLASTN	1819	1e-161	99
930	2221	LIB84-006-Q1-E1-F3	LIB84	g2198852	BLASTN	1615	1e-153	97
931	2221	700575334H1	SATMON030	g2198850	BLASTN	1570	1e-124	99
932	2221	700206250H1	SATMON003	g2198850	BLASTN	1515	1e-117	100
933	2221	700095073H1	SATMON008	g2198852	BLASTN	1490	1e-115	100
934	2221	700571230H1	SATMON030	g2198850	BLASTN	1355	1e-114	93
935	2221	700157358H1	SATMON012	g2198850	BLASTN	1370	1e-105	100
936	2221	700379811H1	SATMON021	g2198850	BLASTN	1345	1e-103	93
937	2221	700041570H1	SATMON004	g2198850	BLASTN	1325	1e-101	100
938	2221	700104063H1	SATMON010	g2198850	BLASTN	1157	1e-95	90
939	2221	700378265H1	SATMON019	g2198850	BLASTN	771	1e-94	99
940	2221	700235329H1	SATMON010	g2198850	BLASTN	1234	1e-94	93
941	2221	LIB3068-057-Q1-K1-D1	LIB3068	g2198852	BLASTN	1209	1e-91	94
942	2221	700159158H1	SATMON012	g2198850	BLASTN	1174	1e-89	94
943	2221	700580854H1	SATMON031	g2198850	BLASTN	754	1e-86	92
944	2221	700623409H1	SATMON034	g2198850	BLASTN	910	1e-84	96
945	2221	701164706H1	SATMONN04	g2198852	BLASTN	577	1e-83	94
946	2221	700164719H1	SATMON013	g2198852	BLASTN	831	1e-83	99
947	2221	700158146H1	SATMON012	g2198850	BLASTN	1100	1e-82	93
948	2221	700203970H1	SATMON003	g2198852	BLASTN	996	1e-80	99
949	2221	700158313H1	SATMON012	g2198850	BLASTN	1036	1e-77	93
950	2221	700425211H1	SATMONN01	g2198852	BLASTN	485	1e-61	96
951	2221	700167764H1	SATMON013	g2198850	BLASTN	793	1e-57	93
952	23788	700102780H1	SATMON010	g2198852	BLASTN	1131	1e-104	99

953	23788	701167458H1	SATMONN05	g2198852	BLASTN	1069	1e-90	93
2655	-700900206	700900206H1	SOYMON027	g1742961	BLASTX	215	1e-24	78
2656	-GM40351	LIB3051-114-Q1-K1-H12	LIB3051	g2198851	BLASTX	122	1e-25	96
2657	12502	701101592H1	SOYMON028	g146846	BLASTX	103	1e-18	44
2658	12502	701106834H1	SOYMON036	g146846	BLASTX	103	1e-18	44
2659	13820	LIB3055-003-Q1-N1-F12	LIB3055	g3202028	BLASTX	193	1e-35	94
2660	8119	700989656H1	SOYMON011	g1742960	BLASTN	815	1e-59	79

CYSTATHIONINE β-LYASE (EC 4.4.1.8)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
954	-700155172	700155172H1	SATMON007	g704397	BLASTX	361	1e-43	78
955	-L362943	LIB36-013-Q1-E1-G10	LIB36	g704396	BLASTN	818	1e-59	75
956	19856	700240664H1	SATMON010	g704396	BLASTN	496	1e-31	69
957	19856	700572496H1	SATMON030	g704396	BLASTN	446	1e-26	68
958	22960	701170964H1	SATMONN05	g704396	BLASTN	778	1e-56	78
959	22960	LIB3061-002-Q1-K2-F9	LIB3061	g704396	BLASTN	765	1e-53	77
960	22960	701172780H2	SATMONN05	g704396	BLASTN	686	1e-48	73
961	22960	700578571H1	SATMON031	g704397	BLASTX	222	1e-23	89
962	30752	LIB3078-055-Q1-K1-C8	LIB3078	g704396	BLASTN	747	1e-51	71
963	30752	700086603H1	SATMON011	g704397	BLASTX	192	1e-18	64
2661	-701001147	701001147H1	SOYMON018	g704396	BLASTN	847	1e-61	78
2662	18602	700566066H1	SOYMON002	g704396	BLASTN	751	1e-57	79
2663	18602	700890955H1	SOYMON024	g704396	BLASTN	698	1e-49	77
2664	18602	700896865H1	SOYMON027	g704396	BLASTN	682	1e-48	77
2665	5144	LIB3050-006-Q1-E1-A9	LIB3050	g1399263	BLASTX	96	1e-31	41

5-METHYLTETRAHYDROPTEROYLTRIGLUTAMATE--HOMOCYSTEINE S-METHYLTRANSFERASE (EC 2.1.1.14)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
964	-700212217	700212217H1	SATMON016	g886471	BLASTX	151	1e-16	93
965	-700333966	700333966H1	SATMON019	g886470	BLASTN	370	1e-23	66
966	-700377403	700377403H1	SATMON019	g2738247	BLASTN	305	1e-26	80
967	-700571893	700571893H1	SATMON030	g974781	BLASTN	262	1e-20	80
968	-701165656	701165656H1	SATMONN04	g2738247	BLASTN	450	1e-50	73
969	-L30622954	LIB3062-030-Q1-K1-C9	LIB3062	g886470	BLASTN	366	1e-26	81
970	-L30662004	LIB3066-026-Q1-K1-F1	LIB3066	g2738248	BLASTX	140	1e-28	77
971	-L30671450	LIB3067-001-Q1-K1-C6	LIB3067	g2738247	BLASTN	553	1e-46	69
972	-L30694410	LIB3069-057-Q1-K1-B4	LIB3069	g886470	BLASTN	447	1e-26	67
973	1	700452404H1	SATMON028	g453939	BLASTX	59	1e-17	94
974	13513	700049012H1	SATMON003	g1814402	BLASTN	1006	1e-74	81
975	13513	700086058H1	SATMON011	g1814402	BLASTN	982	1e-72	81
976	13513	700235814H1	SATMON010	g1814402	BLASTN	890	1e-65	79
977	13513	700170015H1	SATMON013	g1814402	BLASTN	578	1e-39	78
978	3835	700093161H1	SATMON008	g974781	BLASTN	858	1e-62	76
979	3835	700223321H1	SATMON011	g974781	BLASTN	836	1e-60	80
980	3835	700454003H1	SATMON029	g974781	BLASTN	823	1e-59	82
981	3835	700238925H1	SATMON010	g2738247	BLASTN	733	1e-55	74
982	3835	700075142H1	SATMON007	g2738247	BLASTN	569	1e-52	73
983	3835	700151969H1	SATMON007	g974781	BLASTN	660	1e-46	76
984	3835	700281434H2	SATMON019	g974781	BLASTN	560	1e-45	79

985	3835	700084914H1	SATMON011	g974781	BLASTN	440	1e-36	79
986	3835	700215135H1	SATMON016	g974781	BLASTN	543	1e-36	78
987	3835	700202218H1	SATMON003	g974781	BLASTN	389	1e-23	78
988	3835	700281467H2	SATMON019	g2738248	BLASTX	123	1e-12	71
989	456	LIB3059-019-Q1-K1-G6	LIB3059	g974781	BLASTN	1493	1e-115	83
990	456	LIB3068-012-Q1-K1-G7	LIB3068	g974781	BLASTN	1471	1e-113	81
991	456	LIB3061-050-Q1-K1-G10	LIB3061	g886470	BLASTN	1285	1e-98	82
992	456	LIB3067-043-Q1-K1-F9	LIB3067	g2738247	BLASTN	1287	1e-98	79
993	456	700087169H1	SATMON011	g1814402	BLASTN	1245	1e-94	86
994	456	LIB3069-030-Q1-K1-G9	LIB3069	g1814402	BLASTN	772	1e-93	80
995	456	LIB3069-019-Q1-K1-G11	LIB3069	g1814402	BLASTN	1202	1e-91	81
996	456	700202514H1	SATMON003	g1814402	BLASTN	1134	1e-89	84
997	456	LIB3062-011-Q1-K1-F2	LIB3062	g886470	BLASTN	664	1e-86	84
998	456	LIB143-015-Q1-E1-A1	LIB143	g974781	BLASTN	1143	1e-86	81
999	456	700570326H1	SATMON030	g974781	BLASTN	1089	1e-85	83
1000	456	700103727H1	SATMON010	g2738247	BLASTN	1132	1e-85	86
1001	456	700574823H1	SATMON030	g1814402	BLASTN	1135	1e-85	80
1002	456	700091666H1	SATMON011	g1814402	BLASTN	1136	1e-85	84
1003	456	LIB3069-033-Q1-K1-E9	LIB3069	g2738247	BLASTN	1115	1e-84	79
1004	456	700572634H1	SATMON030	g1814402	BLASTN	1123	1e-84	85
1005	456	700211829H1	SATMON016	g2738247	BLASTN	1096	1e-82	84
1006	456	700087109H1	SATMON011	g1814402	BLASTN	1102	1e-82	85
1007	456	LIB3059-003-Q1-K1-B1	LIB3059	g1814402	BLASTN	961	1e-81	82
1008	456	700047556H1	SATMON003	g2738247	BLASTN	976	1e-81	82
1009	456	700201925H1	SATMON003	g2738247	BLASTN	1001	1e-81	84
1010	456	700209343H1	SATMON016	g1814402	BLASTN	1081	1e-81	82
1011	456	700348416H1	SATMON023	g1814402	BLASTN	1081	1e-81	83
1012	456	700095559H1	SATMON008	g1814402	BLASTN	1085	1e-81	82
1013	456	700073472H1	SATMON007	g1814402	BLASTN	1089	1e-81	82
1014	456	LIB3062-057-Q1-K1-C2	LIB3062	g886470	BLASTN	1073	1e-80	78
1015	456	700093445H1	SATMON008	g1814402	BLASTN	1076	1e-80	84
1016	456	LIB143-026-Q1-E1-H3	LIB143	g2738247	BLASTN	648	1e-79	79
1017	456	700206240H1	SATMON003	g1814402	BLASTN	1057	1e-79	82
1018	456	700091907H1	SATMON011	g886470	BLASTN	1062	1e-79	80
1019	456	700258178H1	SATMON017	g1814402	BLASTN	1064	1e-79	84
1020	456	700086565H1	SATMON011	g1814402	BLASTN	1065	1e-79	82
1021	456	700471452H1	SATMON025	g2738247	BLASTN	1045	1e-78	85
1022	456	700243858H1	SATMON010	g1814402	BLASTN	1048	1e-78	85
1023	456	700352224H1	SATMON023	g2738247	BLASTN	1051	1e-78	84
1024	456	700084769H1	SATMON011	g1814402	BLASTN	1054	1e-78	83
1025	456	700082818H1	SATMON011	g886470	BLASTN	984	1e-77	84
1026	456	700331974H1	SATMON019	g886470	BLASTN	1031	1e-77	82
1027	456	700086203H1	SATMON011	g1814402	BLASTN	1032	1e-77	81
1028	456	700075826H1	SATMON007	g2738247	BLASTN	1038	1e-77	82
1029	456	700104555H1	SATMON010	g886470	BLASTN	1039	1e-77	79
1030	456	700074084H1	SATMON007	g2738247	BLASTN	1039	1e-77	87
1031	456	700076872H1	SATMON007	g1814402	BLASTN	700	1e-76	83
1032	456	700050704H1	SATMON003	g1814402	BLASTN	880	1e-76	82
1033	456	700030215H1	SATMON003	g974781	BLASTN	1019	1e-76	83
1034	456	700077416H1	SATMON007	g886470	BLASTN	1019	1e-76	79
1035	456	700093982H1	SATMON008	g1814402	BLASTN	1019	1e-76	82
1036	456	700048847H1	SATMON003	g2738247	BLASTN	1023	1e-76	85
1037	456	700090739H1	SATMON011	g886470	BLASTN	1026	1e-76	82
1038	456	700092904H1	SATMON008	g886470	BLASTN	1026	1e-76	82

1039	456	LIB3068-009-Q1-K1-E5	LIB3068	g1814402	BLASTN	1027	1e-76	73
1040	456	700336705H1	SATMON019	g1814402	BLASTN	747	1e-75	83
1041	456	700344872H1	SATMON021	g1814402	BLASTN	768	1e-75	85
1042	456	LIB3066-019-Q1-K1-E1	LIB3066	g886470	BLASTN	868	1e-75	81
1043	456	700086322H1	SATMON011	g2738247	BLASTN	1015	1e-75	81
1044	456	LIB3067-052-Q1-K1-B12	LIB3067	g974781	BLASTN	1033	1e-75	81
1045	456	700221395H1	SATMON011	g2738247	BLASTN	1000	1e-74	85
1046	456	700092483H1	SATMON008	g1814402	BLASTN	1001	1e-74	82
1047	456	700618708H1	SATMON034	g886470	BLASTN	1003	1e-74	82
1048	456	700074191H1	SATMON007	g2738247	BLASTN	1005	1e-74	86
1049	456	LIB143-055-Q1-E1-F10	LIB143	g1814402	BLASTN	986	1e-73	83
1050	456	700025955H1	SATMON003	g1814402	BLASTN	993	1e-73	84
1051	456	700574824H1	SATMON030	g886470	BLASTN	564	1e-72	80
1052	456	700201527H1	SATMON003	g974781	BLASTN	812	1e-72	81
1053	456	700092202H1	SATMON008	g886470	BLASTN	946	1e-72	79
1054	456	700223674H1	SATMON011	g2738247	BLASTN	971	1e-72	83
1055	456	700092638H1	SATMON008	g1814402	BLASTN	972	1e-72	84
1056	456	700090025H1	SATMON011	g974781	BLASTN	973	1e-72	81
1057	456	700217069H1	SATMON016	g2738247	BLASTN	976	1e-72	83
1058	456	700349142H1	SATMON023	g1814402	BLASTN	980	1e-72	82
1059	456	700088387H1	SATMON011	g2738247	BLASTN	980	1e-72	85
1060	456	700215102H1	SATMON016	g886470	BLASTN	980	1e-72	79
1061	456	700456708H1	SATMON029	g2738247	BLASTN	982	1e-72	82
1062	456	700210025H1	SATMON016	g1814402	BLASTN	982	1e-72	81
1063	456	700335345H1	SATMON019	g974781	BLASTN	982	1e-72	84
1064	456	700085257H1	SATMON011	g1814402	BLASTN	554	1e-71	82
1065	456	700026781H1	SATMON003	g974781	BLASTN	961	1e-71	82
1066	456	700224265H1	SATMON011	g2738247	BLASTN	962	1e-71	83
1067	456	700083282H1	SATMON011	g1814402	BLASTN	962	1e-71	83
1068	456	700381324H1	SATMON023	g1814402	BLASTN	965	1e-71	82
1069	456	700212017H1	SATMON016	g1814402	BLASTN	640	1e-70	83
1070	456	700088053H1	SATMON011	g886470	BLASTN	853	1e-70	84
1071	456	LIB3062-032-Q1-K1-C2	LIB3062	g1814402	BLASTN	883	1e-70	80
1072	456	700083030H1	SATMON011	g1814402	BLASTN	948	1e-70	81
1073	456	700613980H1	SATMON033	g1814402	BLASTN	950	1e-70	83
1074	456	700347019H1	SATMON021	g974781	BLASTN	952	1e-70	81
1075	456	700335621H1	SATMON019	g1814402	BLASTN	952	1e-70	80
1076	456	700094101H1	SATMON008	g1814402	BLASTN	953	1e-70	83
1077	456	700073128H1	SATMON007	g2738247	BLASTN	954	1e-70	78
1078	456	700076245H1	SATMON007	g1814402	BLASTN	955	1e-70	83
1079	456	700071903H1	SATMON007	g886470	BLASTN	956	1e-70	81
1080	456	700090035H1	SATMON011	g886470	BLASTN	935	1e-69	80
1081	456	700405323H1	SATMON029	g1814402	BLASTN	937	1e-69	83
1082	456	700050121H1	SATMON003	g886470	BLASTN	938	1e-69	83
1083	456	700224714H1	SATMON011	g1814402	BLASTN	939	1e-69	82
1084	456	700281535H2	SATMON019	g1814402	BLASTN	940	1e-69	81
1085	456	700222093H1	SATMON011	g2738247	BLASTN	941	1e-69	81
1086	456	700094659H1	SATMON008	g1814402	BLASTN	942	1e-69	84
1087	456	700237187H1	SATMON010	g1814402	BLASTN	942	1e-69	84
1088	456	700023210H1	SATMON003	g1814402	BLASTN	943	1e-69	83
1089	456	700072813H1	SATMON007	g1814402	BLASTN	944	1e-69	82
1090	456	700075720H1	SATMON007	g1814402	BLASTN	946	1e-69	83
1091	456	700072107H1	SATMON007	g1814402	BLASTN	946	1e-69	80
1092	456	700082225H1	SATMON011	g1814402	BLASTN	691	1e-68	82

1093	456	700085411H1	SATMON011	g1814402	BLASTN	723	1e-68	83
1094	456	700454357H1	SATMON029	g2738247	BLASTN	926	1e-68	82
1095	456	700620976H1	SATMON034	g1814402	BLASTN	927	1e-68	81
1096	456	700241483H1	SATMON010	g1814402	BLASTN	931	1e-68	86
1097	456	700355459H1	SATMON024	g974781	BLASTN	931	1e-68	82
1098	456	700095875H1	SATMON008	g1814402	BLASTN	931	1e-68	87
1099	456	700076702H1	SATMON007	g1814402	BLASTN	934	1e-68	84
1100	456	700212538H1	SATMON016	g1814402	BLASTN	689	1e-67	85
1101	456	700086479H1	SATMON011	g1814402	BLASTN	715	1e-67	82
1102	456	700453684H1	SATMON028	g1814402	BLASTN	747	1e-67	83
1103	456	700204454H1	SATMON003	g1814402	BLASTN	797	1e-67	82
1104	456	700612577H1	SATMON033	g974781	BLASTN	911	1e-67	81
1105	456	700474018H1	SATMON025	g886470	BLASTN	917	1e-67	81
1106	456	700213602H1	SATMON016	g886470	BLASTN	917	1e-67	76
1107	456	700076911H1	SATMON007	g974781	BLASTN	917	1e-67	81
1108	456	700223313H1	SATMON011	g886470	BLASTN	919	1e-67	84
1109	456	700220692H1	SATMON011	g974781	BLASTN	920	1e-67	81
1110	456	700258038H1	SATMON017	g886470	BLASTN	920	1e-67	83
1111	456	700095862H1	SATMON008	g1814402	BLASTN	922	1e-67	86
1112	456	700213396H1	SATMON016	g886470	BLASTN	922	1e-67	83
1113	456	700354259H1	SATMON024	g974781	BLASTN	638	1e-66	81
1114	456	700471505H1	SATMON025	g886470	BLASTN	681	1e-66	83
1115	456	700202439H1	SATMON003	g1814402	BLASTN	706	1e-66	82
1116	456	700223609H1	SATMON011	g974781	BLASTN	770	1e-66	83
1117	456	700405260H1	SATMON028	g1814402	BLASTN	782	1e-66	86
1118	456	700085214H1	SATMON011	g886470	BLASTN	814	1e-66	84
1119	456	700211194H1	SATMON016	g1814402	BLASTN	902	1e-66	84
1120	456	700106641H1	SATMON010	g1814402	BLASTN	903	1e-66	82
1121	456	700405170H1	SATMON028	g974781	BLASTN	904	1e-66	79
1122	456	700090015H1	SATMON011	g886470	BLASTN	905	1e-66	80
1123	456	700623154H1	SATMON034	g886470	BLASTN	906	1e-66	81
1124	456	700458895H1	SATMON029	g886470	BLASTN	906	1e-66	83
1125	456	700094073H1	SATMON008	g886470	BLASTN	907	1e-66	78
1126	456	700158508H1	SATMON012	g2738247	BLASTN	909	1e-66	82
1127	456	700027366H1	SATMON003	g1814402	BLASTN	910	1e-66	81
1128	456	700073636H1	SATMON007	g1814402	BLASTN	615	1e-65	87
1129	456	700220207H1	SATMON011	g886470	BLASTN	785	1e-65	84
1130	456	LIB143-007-Q1-E1-A6	LIB143	g886470	BLASTN	807	1e-65	80
1131	456	700575288H1	SATMON030	g1814402	BLASTN	887	1e-65	83
1132	456	700219870H1	SATMON011	g974781	BLASTN	887	1e-65	82
1133	456	701184573H1	SATMONN06	g974781	BLASTN	888	1e-65	81
1134	456	700076946H1	SATMON007	g1814402	BLASTN	891	1e-65	86
1135	456	700214808H1	SATMON016	g2738247	BLASTN	893	1e-65	81
1136	456	700096274H1	SATMON008	g1814402	BLASTN	894	1e-65	80
1137	456	700160445H1	SATMON012	g1814402	BLASTN	896	1e-65	85
1138	456	700071727H1	SATMON007	g974781	BLASTN	898	1e-65	80
1139	456	700571751H1	SATMON030	g1814402	BLASTN	898	1e-65	78
1140	456	700215107H1	SATMON016	g2738247	BLASTN	507	1e-64	77
1141	456	LIB3067-057-Q1-K1-C6	LIB3067	g2738247	BLASTN	555	1e-64	76
1142	456	700614743H1	SATMON033	g886470	BLASTN	748	1e-64	81
1143	456	700444971H1	SATMON027	g974781	BLASTN	803	1e-64	83
1144	456	700224573H1	SATMON011	g1814402	BLASTN	805	1e-64	86
1145	456	700019276H1	SATMON001	g1814402	BLASTN	875	1e-64	83
1146	456	700210440H1	SATMON016	g2738247	BLASTN	881	1e-64	80

1147	456	700093168H1	SATMON008	g1814402	BLASTN	885	1e-64	86
1148	456	700224478H1	SATMON011	g886470	BLASTN	886	1e-64	81
1149	456	700261958H1	SATMON017	g1814402	BLASTN	781	1e-63	79
1150	456	700074221H1	SATMON007	g1814402	BLASTN	825	1e-63	81
1151	456	700089966H1	SATMON011	g1814402	BLASTN	863	1e-63	84
1152	456	700210422H1	SATMON016	g1814402	BLASTN	863	1e-63	81
1153	456	700160272H1	SATMON012	g1814402	BLASTN	863	1e-63	85
1154	456	700444282H1	SATMON027	g2738247	BLASTN	549	1e-62	84
1155	456	700206489H1	SATMON003	g2738247	BLASTN	597	1e-62	80
1156	456	700446452H1	SATMON027	g974781	BLASTN	711	1e-62	80
1157	456	700265473H1	SATMON017	g1814402	BLASTN	715	1e-62	79
1158	456	700473708H1	SATMON025	g1814402	BLASTN	762	1e-62	82
1159	456	LIB3069-025-Q1-K1-A7	LIB3069	g886470	BLASTN	852	1e-62	80
1160	456	700166631H1	SATMON013	g2738247	BLASTN	858	1e-62	85
1161	456	700582413H1	SATMON031	g1814402	BLASTN	861	1e-62	78
1162	456	700071904H1	SATMON007	g2738247	BLASTN	544	1e-61	77
1163	456	700622655H1	SATMON034	g1814402	BLASTN	592	1e-61	82
1164	456	700082541H1	SATMON011	g1814402	BLASTN	793	1e-61	82
1165	456	700335378H1	SATMON019	g2738247	BLASTN	841	1e-61	76
1166	456	700203585H1	SATMON003	g2738247	BLASTN	846	1e-61	86
1167	456	700053043H1	SATMON007	g2738247	BLASTN	847	1e-61	81
1168	456	700163654H1	SATMON013	g1814402	BLASTN	474	1e-60	84
1169	456	700352269H1	SATMON023	g1814402	BLASTN	479	1e-60	84
1170	456	700106187H1	SATMON010	g1814402	BLASTN	631	1e-60	81
1171	456	LIB143-007-Q1-E1-A7	LIB143	g886470	BLASTN	759	1e-60	76
1172	456	700458694H1	SATMON029	g1814402	BLASTN	827	1e-60	86
1173	456	700213509H1	SATMON016	g886470	BLASTN	834	1e-60	81
1174	456	700150191H1	SATMON007	g2738247	BLASTN	834	1e-60	82
1175	456	700157594H1	SATMON012	g1814402	BLASTN	835	1e-60	80
1176	456	700094046H1	SATMON008	g974781	BLASTN	836	1e-60	79
1177	456	700220254H1	SATMON011	g2738247	BLASTN	687	1e-59	77
1178	456	700095485H1	SATMON008	g886470	BLASTN	819	1e-59	77
1179	456	LIB143-006-Q1-E1-B3	LIB143	g1814402	BLASTN	830	1e-59	65
1180	456	700071763H1	SATMON007	g2738247	BLASTN	565	1e-58	75
1181	456	700082259H1	SATMON011	g1814402	BLASTN	707	1e-58	84
1182	456	700020717H1	SATMON001	g886470	BLASTN	805	1e-58	81
1183	456	700041892H1	SATMON004	g1814402	BLASTN	805	1e-58	86
1184	456	700356573H1	SATMON024	g1814402	BLASTN	811	1e-58	81
1185	456	700171632H1	SATMON013	g2738247	BLASTN	811	1e-58	85
1186	456	700222516H1	SATMON011	g1814402	BLASTN	812	1e-58	87
1187	456	700466679H1	SATMON025	g1814402	BLASTN	812	1e-58	87
1188	456	700208929H1	SATMON016	g1814402	BLASTN	407	1e-57	78
1189	456	700355014H1	SATMON024	g1814402	BLASTN	592	1e-57	85
1190	456	701159834H1	SATMONN04	g1814402	BLASTN	683	1e-57	77
1191	456	700351137H1	SATMON023	g974781	BLASTN	725	1e-57	79
1192	456	700027308H1	SATMON003	g2738247	BLASTN	791	1e-57	80
1193	456	700142587H1	SATMON012	g974781	BLASTN	791	1e-57	83
1194	456	700170157H1	SATMON013	g1814402	BLASTN	791	1e-57	81
1195	456	700019438H1	SATMON001	g974781	BLASTN	798	1e-57	82
1196	456	700166430H1	SATMON013	g886470	BLASTN	799	1e-57	84
1197	456	700047369H1	SATMON003	g886470	BLASTN	799	1e-57	80
1198	456	700152373H1	SATMON007	g2738247	BLASTN	799	1e-57	84
1199	456	700050824H1	SATMON003	g2738247	BLASTN	605	1e-56	81
1200	456	700204588H1	SATMON003	g886470	BLASTN	720	1e-56	82

1201	456	700071667H1	SATMON007	g1814402	BLASTN	787	1e-56	85
1202	456	701185269H1	SATMONN06	g886470	BLASTN	598	1e-55	76
1203	456	700243844H1	SATMON010	g2738247	BLASTN	769	1e-55	79
1204	456	700221969H1	SATMON011	g974781	BLASTN	771	1e-55	79
1205	456	700335706H1	SATMON019	g1814402	BLASTN	773	1e-55	80
1206	456	700622285H1	SATMON034	g1814402	BLASTN	774	1e-55	82
1207	456	700089665H1	SATMON011	g2738247	BLASTN	774	1e-55	78
1208	456	700464833H1	SATMON025	g2738247	BLASTN	455	1e-54	72
1209	456	LIB3069-057-Q1-K1-A6	LIB3069	g974781	BLASTN	564	1e-54	76
1210	456	700156818H1	SATMON012	g974781	BLASTN	757	1e-54	81
1211	456	700219420H1	SATMON011	g974781	BLASTN	758	1e-54	79
1212	456	700152570H1	SATMON007	g1814402	BLASTN	761	1e-54	86
1213	456	700084484H1	SATMON011	g1814402	BLASTN	764	1e-54	84
1214	456	700152208H1	SATMON007	g1814402	BLASTN	765	1e-54	82
1215	456	700550889H1	SATMON022	g2738247	BLASTN	546	1e-53	76
1216	456	700025869H1	SATMON003	g2738247	BLASTN	675	1e-53	79
1217	456	700383075H1	SATMON024	g974781	BLASTN	724	1e-53	81
1218	456	700575104H1	SATMON030	g1814402	BLASTN	745	1e-53	70
1219	456	LIB3069-022-Q1-K1-C1	LIB3069	g974781	BLASTN	768	1e-53	81
1220	456	700215272H1	SATMON016	g1814402	BLASTN	674	1e-52	83
1221	456	700167881H1	SATMON013	g974781	BLASTN	737	1e-52	79
1222	456	700019727H1	SATMON001	g2738247	BLASTN	737	1e-52	81
1223	456	700351776H1	SATMON023	g886470	BLASTN	741	1e-52	76
1224	456	700210543H1	SATMON016	g974781	BLASTN	742	1e-52	85
1225	456	700571604H1	SATMON030	g1814402	BLASTN	360	1e-51	76
1226	456	700169777H1	SATMON013	g1814402	BLASTN	426	1e-51	83
1227	456	700096744H1	SATMON008	g2738247	BLASTN	539	1e-51	79
1228	456	700383157H1	SATMON024	g974781	BLASTN	667	1e-51	79
1229	456	700155764H1	SATMON007	g886470	BLASTN	721	1e-51	75
1230	456	700150817H1	SATMON007	g1814402	BLASTN	727	1e-51	75
1231	456	700619660H1	SATMON034	g886470	BLASTN	727	1e-51	73
1232	456	700471085H1	SATMON025	g1814402	BLASTN	406	1e-50	79
1233	456	700163226H1	SATMON013	g2738247	BLASTN	475	1e-50	78
1234	456	700444567H1	SATMON027	g1814402	BLASTN	498	1e-50	81
1235	456	700457303H1	SATMON029	g2738247	BLASTN	662	1e-50	80
1236	456	700088065H1	SATMON011	g886470	BLASTN	707	1e-50	79
1237	456	700152592H1	SATMON007	g886470	BLASTN	716	1e-50	80
1238	456	LIB3068-061-Q1-K1-B2	LIB3068	g886470	BLASTN	730	1e-50	78
1239	456	700331880H1	SATMON019	g1814402	BLASTN	697	1e-49	85
1240	456	700218025H1	SATMON016	g886470	BLASTN	700	1e-49	79
1241	456	700348643H1	SATMON023	g1814402	BLASTN	701	1e-49	80
1242	456	700236975H1	SATMON010	g974781	BLASTN	704	1e-49	81
1243	456	700442968H1	SATMON026	g886470	BLASTN	418	1e-48	79
1244	456	700479529H1	SATMON034	g2738247	BLASTN	508	1e-48	75
1245	456	700160983H1	SATMON012	g1814402	BLASTN	690	1e-48	83
1246	456	700050185H1	SATMON003	g974781	BLASTN	421	1e-47	75
1247	456	700611764H1	SATMON022	g1814402	BLASTN	503	1e-47	79
1248	456	700622669H1	SATMON034	g1814402	BLASTN	549	1e-47	79
1249	456	700153237H1	SATMON007	g1814402	BLASTN	672	1e-47	80
1250	456	700242703H1	SATMON010	g886470	BLASTN	682	1e-47	81
1251	456	700165177H1	SATMON013	g2738247	BLASTN	682	1e-47	78
1252	456	700379889H1	SATMON021	g886470	BLASTN	682	1e-47	85
1253	456	700449243H1	SATMON028	g1814402	BLASTN	357	1e-46	83
1254	456	700453282H1	SATMON028	g886470	BLASTN	608	1e-46	81

1255	456	700224308H1	SATMON011	g1814402	BLASTN	661	1e-46	83
1256	456	700150484H1	SATMON007	g886470	BLASTN	663	1e-46	78
1257	456	700240609H1	SATMON010	g2738247	BLASTN	668	1e-46	79
1258	456	700171610H1	SATMON013	g974781	BLASTN	669	1e-46	79
1259	456	LIB143-027-Q1-E1-H3	LIB143	g1814402	BLASTN	670	1e-46	86
1260	456	700334084H1	SATMON019	g1814402	BLASTN	467	1e-45	81
1261	456	LIB3069-043-Q1-K1-H6	LIB3069	g886470	BLASTN	546	1e-45	83
1262	456	700222515H1	SATMON011	g1814402	BLASTN	648	1e-45	75
1263	456	700223749H1	SATMON011	g1814402	BLASTN	648	1e-45	75
1264	456	701180187H1	SATMONN05	g974781	BLASTN	648	1e-45	78
1265	456	700050111H1	SATMON003	g2738247	BLASTN	653	1e-45	82
1266	456	700051275H1	SATMON003	g1814402	BLASTN	379	1e-44	75
1267	456	700235202H1	SATMON010	g2738247	BLASTN	637	1e-44	80
1268	456	700257385H1	SATMON017	g1814402	BLASTN	638	1e-44	80
1269	456	LIB143-028-Q1-E1-H7	LIB143	g1814402	BLASTN	638	1e-44	80
1270	456	700576066H1	SATMON030	g886470	BLASTN	516	1e-43	76
1271	456	700455065H1	SATMON029	g886470	BLASTN	624	1e-43	79
1272	456	700074158H1	SATMON007	g1814402	BLASTN	630	1e-43	83
1273	456	700171322H1	SATMON013	g1814402	BLASTN	634	1e-43	77
1274	456	700457369H1	SATMON029	g974781	BLASTN	392	1e-42	83
1275	456	700378252H1	SATMON019	g2738247	BLASTN	462	1e-42	77
1276	456	700454626H1	SATMON029	g1814402	BLASTN	495	1e-42	85
1277	456	700208182H1	SATMON016	g2738247	BLASTN	564	1e-42	73
1278	456	700618848H1	SATMON034	g886470	BLASTN	615	1e-42	80
1279	456	700222969H1	SATMON011	g1814402	BLASTN	622	1e-42	74
1280	456	700444782H1	SATMON027	g1814402	BLASTN	337	1e-41	81
1281	456	700204404H1	SATMON003	g2738247	BLASTN	607	1e-41	80
1282	456	700347028H1	SATMON021	g1814402	BLASTN	598	1e-40	81
1283	456	700172447H1	SATMON013	g1814402	BLASTN	328	1e-39	85
1284	456	700549696H1	SATMON022	g886470	BLASTN	360	1e-39	81
1285	456	700257287H1	SATMON017	g1814402	BLASTN	365	1e-38	84
1286	456	700569630H1	SATMON030	g1814402	BLASTN	566	1e-38	78
1287	456	700207258H1	SATMON017	g1814402	BLASTN	568	1e-38	85
1288	456	700052467H1	SATMON003	g1814402	BLASTN	515	1e-37	82
1289	456	700083656H1	SATMON011	g2738247	BLASTN	552	1e-37	83
1290	456	700429279H1	SATMONN01	g2738247	BLASTN	556	1e-37	79
1291	456	700349921H1	SATMON023	g2738247	BLASTN	471	1e-36	78
1292	456	700449609H1	SATMON028	g886470	BLASTN	540	1e-36	81
1293	456	700150152H1	SATMON007	g1814402	BLASTN	543	1e-36	74
1294	456	700075675H1	SATMON007	g1814402	BLASTN	546	1e-36	81
1295	456	700267015H1	SATMON017	g886470	BLASTN	550	1e-36	75
1296	456	700465118H1	SATMON025	g1814402	BLASTN	555	1e-36	78
1297	456	700456662H1	SATMON029	g2738247	BLASTN	314	1e-34	76
1298	456	700405315H1	SATMON029	g886470	BLASTN	519	1e-34	83
1299	456	700218639H1	SATMON011	g974781	BLASTN	524	1e-34	81
1300	456	700216606H1	SATMON016	g1814402	BLASTN	524	1e-34	83
1301	456	700456965H1	SATMON029	g2738247	BLASTN	525	1e-34	78
1302	456	700102147H1	SATMON010	g974781	BLASTN	526	1e-34	82
1303	456	700235734H1	SATMON010	g2738247	BLASTN	526	1e-34	83
1304	456	LIB3068-009-Q1-K1-E10	LIB3068	g886470	BLASTN	548	1e-34	70
1305	456	700029363H1	SATMON003	g974781	BLASTN	377	1e-33	80
1306	456	LIB3069-030-Q1-K1-D10	LIB3069	g886470	BLASTN	297	1e-30	78
1307	456	700334895H1	SATMON019	g974781	BLASTN	468	1e-30	82
1308	456	700150963H1	SATMON007	g974781	BLASTN	459	1e-29	88

1309	456	700152817H1	SATMON007	g974781	BLASTN	459	1e-29	88
1310	456	700208732H1	SATMON016	g974781	BLASTN	485	1e-29	76
1311	456	700051461H1	SATMON003	g886470	BLASTN	467	1e-28	73
1312	456	700616589H1	SATMON033	g2738247	BLASTN	273	1e-27	78
1313	456	700236150H1	SATMON010	g974781	BLASTN	434	1e-27	84
1314	456	700453369H1	SATMON028	g1814402	BLASTN	436	1e-27	84
1315	456	700621739H1	SATMON034	g1814402	BLASTN	436	1e-27	69
1316	456	700075162H1	SATMON007	g1814402	BLASTN	438	1e-27	85
1317	456	700405040H1	SATMON027	g974781	BLASTN	438	1e-27	72
1318	456	700356893H1	SATMON024	g974781	BLASTN	458	1e-27	82
1319	456	701185493H1	SATMONN06	g886471	BLASTX	72	1e-26	97
1320	456	700206095H1	SATMON003	g974781	BLASTN	421	1e-26	83
1321	456	700083901H1	SATMON011	g1814402	BLASTN	421	1e-26	80
1322	456	LIB3062-026-Q1-K1-D7	LIB3062	g1814402	BLASTN	423	1e-24	81
1323	456	700377277H1	SATMON019	g1814402	BLASTN	357	1e-20	75
1324	456	700201214H1	SATMON003	g2738248	BLASTX	152	1e-18	77
1325	456	700025959H1	SATMON003	g886471	BLASTX	188	1e-18	94
1326	456	700259484H1	SATMON017	g1814402	BLASTN	189	1e-17	82
1327	456	700613969H1	SATMON033	g886470	BLASTN	315	1e-17	90
1328	456	700215602H1	SATMON016	g2738248	BLASTX	158	1e-16	74
1329	456	700438152H1	SATMON026	g2738247	BLASTN	258	1e-16	75
1330	456	700458654H1	SATMON029	g886470	BLASTN	330	1e-16	70
1331	456	700449563H1	SATMON028	g886471	BLASTX	163	1e-15	89
1332	456	700236490H1	SATMON010	g1814402	BLASTN	276	1e-14	89
1333	456	700456927H1	SATMON029	g1814403	BLASTX	119	1e-13	86
1334	456	701180088H1	SATMONN05	g886471	BLASTX	152	1e-13	60
1335	456	700455716H1	SATMON029	g2738248	BLASTX	111	1e-12	67
1336	456	700573520H1	SATMON030	g886471	BLASTX	82	1e-11	84
1337	456	700569938H1	SATMON030	g2738248	BLASTX	132	1e-11	91
1338	456	700551958H1	SATMON022	g2738247	BLASTN	264	1e-11	82
1339	456	700337475H1	SATMON020	g2738247	BLASTN	268	1e-11	83
1340	456	700170827H1	SATMON013	g886471	BLASTX	124	1e-10	77
1341	456	700453382H1	SATMON028	g974781	BLASTN	152	1e-10	85
1342	456	700089211H1	SATMON011	g2738247	BLASTN	245	1e-9	79
1343	456	700103155H1	SATMON010	g2738248	BLASTX	82	1e-8	85
1344	5523	LIB3062-017-Q1-K1-F4	LIB3062	g2738247	BLASTN	932	1e-84	76
1345	5523	700210708H1	SATMON016	g2738247	BLASTN	952	1e-70	79
1346	5523	700219307H1	SATMON011	g1814402	BLASTN	892	1e-65	78
1347	5523	700221188H1	SATMON011	g2738247	BLASTN	867	1e-63	81
1348	5523	700203884H1	SATMON003	g2738247	BLASTN	874	1e-63	77
1349	5523	700218549H1	SATMON011	g2738247	BLASTN	811	1e-58	77
1350	5523	700572845H2	SATMON030	g2738247	BLASTN	785	1e-56	77
1351	5523	700152362H1	SATMON007	g886470	BLASTN	742	1e-52	79
1352	5523	700152138H1	SATMON007	g2738247	BLASTN	714	1e-50	80
1353	5523	700218842H1	SATMON011	g2738247	BLASTN	700	1e-49	75
2666	-700697958	700697958H1	SOYMON015	g2738247	BLASTN	258	1e-10	83
2667	-700731277	700731277H1	SOYMON009	g886470	BLASTN	930	1e-68	83
2668	-700749261	700749261H1	SOYMON013	g1814402	BLASTN	508	1e-38	78
2669	-700787742	700787742H2	SOYMON011	g1814402	BLASTN	648	1e-50	81
2670	-700831146	700831146H1	SOYMON019	g1814402	BLASTN	476	1e-34	80
2671	-700832029	700832029H1	SOYMON019	g1814402	BLASTN	328	1e-27	78
2672	-700854481	700854481H1	SOYMON023	g1814402	BLASTN	193	1e-11	85
2673	-700873716	700873716H1	SOYMON018	g1749542	BLASTX	99	1e-15	53
2674	-700893904	700893904H1	SOYMON024	g886470	BLASTN	413	1e-25	82

2675	-700909658	700909658H1	SOYMON022	g1814402	BLASTN	251	1e-10	91
2676	-700943841	700943841H1	SOYMON024	g886470	BLASTN	549	1e-49	82
2677	-700963223	700963223H1	SOYMON022	g886470	BLASTN	649	1e-45	72
2678	-700974103	700974103H1	SOYMON005	g886470	BLASTN	763	1e-54	80
2679	-700994293	700994293H1	SOYMON011	g974782	BLASTX	97	1e-12	72
2680	-701004816	701004816H1	SOYMON019	g1814402	BLASTN	582	1e-39	84
2681	-701007125	701007125H1	SOYMON019	g1814403	BLASTX	152	1e-13	87
2682	-701008540	701008540H1	SOYMON019	g886470	BLASTN	770	1e-55	74
2683	-701037766	701037766H1	SOYMON029	g1814403	BLASTX	72	1e-10	69
2684	-701062191	701062191H1	SOYMON033	g974781	BLASTN	225	1e-9	79
2685	-701105474	701105474H1	SOYMON036	g974782	BLASTX	164	1e-15	91
2686	-GM14442	LIB3049-056-Q1-E1-B1	LIB3049	g974781	BLASTN	231	1e-10	79
2687	-GM19631	LIB3056-007-Q1-N1-G9	LIB3056	g974781	BLASTN	388	1e-37	78
2688	-GM37189	LIB3051-072-Q1-K1-B5	LIB3051	g1814402	BLASTN	316	1e-15	78
2689	-GM44802	LIB3053-004-Q1-N1-B2	LIB3053	g974782	BLASTX	85	1e-26	90
2690	1382	700683236H1	SOYMON008	g886470	BLASTN	805	1e-58	78
2691	1382	700566434H1	SOYMON002	g886471	BLASTX	162	1e-23	76
2692	15690	701064361H1	SOYMON034	g974781	BLASTN	951	1e-70	84
2693	15690	700847301H1	SOYMON021	g886470	BLASTN	707	1e-66	85
2694	17335	LIB3051-088-Q1-K1-D9	LIB3051	g886470	BLASTN	1285	1e-101	79
2695	17335	701003832H1	SOYMON019	g974781	BLASTN	811	1e-58	77
2696	17335	700864888H1	SOYMON016	g1814402	BLASTN	767	1e-55	79
2697	17335	700672491H1	SOYMON006	g974781	BLASTN	428	1e-46	75
2698	17335	701003457H1	SOYMON019	g1814402	BLASTN	411	1e-29	84
2699	17335	700833672H1	SOYMON019	g974781	BLASTN	445	1e-28	79
2700	17900	700850578H1	SOYMON023	g2738247	BLASTN	905	1e-66	82
2701	17900	701053154H1	SOYMON032	g1814402	BLASTN	725	1e-65	83
2702	17900	700842351H1	SOYMON020	g1814402	BLASTN	878	1e-64	83
2703	17900	700837656H1	SOYMON020	g1814402	BLASTN	841	1e-61	83
2704	17900	700890851H1	SOYMON024	g974781	BLASTN	747	1e-53	80
2705	20688	700908840H1	SOYMON022	g2738247	BLASTN	889	1e-65	82
2706	20688	700908848H1	SOYMON022	g2738247	BLASTN	877	1e-64	81
2707	33542	LIB3051-009-Q1-E1-E5	LIB3051	g974781	BLASTN	1218	1e-92	79
2708	33542	700748773H1	SOYMON013	g974781	BLASTN	669	1e-46	78
2709	33542	700836363H1	SOYMON020	g2738247	BLASTN	596	1e-40	80
2710	4243	701123616H1	SOYMON037	g1814402	BLASTN	995	1e-74	87
2711	4243	700555001H1	SOYMON001	g1814402	BLASTN	975	1e-72	90
2712	4243	701002967H1	SOYMON019	g1814402	BLASTN	950	1e-70	86
2713	4243	700653509H1	SOYMON003	g1814402	BLASTN	539	1e-69	85
2714	4243	701206028H1	SOYMON035	g1814402	BLASTN	938	1e-69	86
2715	4243	700962115H1	SOYMON022	g1814402	BLASTN	923	1e-68	86
2716	4243	700866243H1	SOYMON016	g1814402	BLASTN	909	1e-66	82
2717	4243	700752507H1	SOYMON014	g1814402	BLASTN	887	1e-65	85
2718	4243	701003887H1	SOYMON019	g1814402	BLASTN	863	1e-63	86
2719	4243	700556913H1	SOYMON001	g1814402	BLASTN	865	1e-63	86
2720	4243	701013549H1	SOYMON019	g1814402	BLASTN	867	1e-63	90
2721	4243	701209706H1	SOYMON035	g1814402	BLASTN	871	1e-63	90
2722	4243	701010487H1	SOYMON019	g1814402	BLASTN	529	1e-62	79
2723	4243	700548246H1	SOYMON002	g1814402	BLASTN	553	1e-62	82
2724	4243	701138219H1	SOYMON038	g1814402	BLASTN	594	1e-62	86
2725	4243	700965160H1	SOYMON022	g1814402	BLASTN	852	1e-62	91
2726	4243	701015168H1	SOYMON019	g1814402	BLASTN	855	1e-62	89
2727	4243	701136095H1	SOYMON038	g1814402	BLASTN	839	1e-61	88
2728	4243	700761789H1	SOYMON015	g1814402	BLASTN	845	1e-61	86

2729	4243	701105695H1	SOYMON036	g1814402	BLASTN	835	1e-60	87
2730	4243	700991714H1	SOYMON011	g1814402	BLASTN	502	1e-59	83
2731	4243	700564223H1	SOYMON002	g1814402	BLASTN	557	1e-59	90
2732	4243	700987384H1	SOYMON009	g1814402	BLASTN	803	1e-58	86
2733	4243	700833934H1	SOYMON019	g1814402	BLASTN	806	1e-58	89
2734	4243	700835181H1	SOYMON019	g1814402	BLASTN	806	1e-58	82
2735	4243	700737529H1	SOYMON010	g1814402	BLASTN	810	1e-58	92
2736	4243	701012851H1	SOYMON019	g1814402	BLASTN	811	1e-58	91
2737	4243	700556592H1	SOYMON001	g1814402	BLASTN	814	1e-58	88
2738	4243	700907579H1	SOYMON022	g1814402	BLASTN	781	1e-56	89
2739	4243	700961749H1	SOYMON022	g1814402	BLASTN	785	1e-56	91
2740	4243	700835239H1	SOYMON019	g1814402	BLASTN	787	1e-56	86
2741	4243	700646425H1	SOYMON013	g1814402	BLASTN	772	1e-55	89
2742	4243	701123924H1	SOYMON037	g1814402	BLASTN	775	1e-55	91
2743	4243	700957759H1	SOYMON022	g1814402	BLASTN	776	1e-55	90
2744	4243	700964425H1	SOYMON022	g1814402	BLASTN	777	1e-55	86
2745	4243	700962173H1	SOYMON022	g1814402	BLASTN	778	1e-55	91
2746	4243	701066293H1	SOYMON034	g1814402	BLASTN	759	1e-54	81
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2750	4243	701060510H1	SOYMON033	g1814402	BLASTN	748	1e-53	84
2751	4243	700848730H1	SOYMON021	g1814402	BLASTN	749	1e-53	90
2752	4243	700754870H1	SOYMON014	g1814402	BLASTN	751	1e-53	84
2753	4243	701212482H1	SOYMON035	g1814402	BLASTN	751	1e-53	84
2754	4243	700753283H1	SOYMON014	g1814402	BLASTN	752	1e-53	86
2755	4243	700738517H1	SOYMON012	g1814402	BLASTN	636	1e-52	89
2756	4243	700833978H1	SOYMON019	g1814402	BLASTN	740	1e-52	91
2757	4243	700756424H1	SOYMON014	g1814402	BLASTN	729	1e-51	82
2758	4243	701011759H1	SOYMON019	g1814402	BLASTN	729	1e-51	91
2759	4243	701010103H2	SOYMON019	g1814402	BLASTN	707	1e-50	82
2760	4243	700741392H1	SOYMON012	g1814402	BLASTN	707	1e-50	84
2761	4243	701123062H1	SOYMON037	g1814402	BLASTN	308	1e-49	88
2762	4243	701048949H1	SOYMON032	g1814402	BLASTN	502	1e-49	85
2763	4243	700834566H1	SOYMON019	g1814402	BLASTN	618	1e-49	88
2764	4243	700963965H1	SOYMON022	g1814402	BLASTN	685	1e-48	78
2765	4243	700986376H1	SOYMON009	g1814402	BLASTN	694	1e-48	84
2766	4243	701012708H1	SOYMON019	g1814402	BLASTN	521	1e-47	91
2767	4243	700746927H1	SOYMON013	g1814402	BLASTN	547	1e-46	78
2768	4243	700997448H1	SOYMON018	g1814402	BLASTN	470	1e-45	89
2769	4243	700830667H1	SOYMON019	g1814402	BLASTN	647	1e-45	86
2770	4243	700891479H1	SOYMON024	g1814402	BLASTN	654	1e-45	88
2771	4243	700562246H1	SOYMON002	g1814402	BLASTN	656	1e-45	86
2772	4243	701097325H1	SOYMON028	g1814402	BLASTN	420	1e-44	92
2773	4243	700835830H1	SOYMON019	g1814402	BLASTN	503	1e-44	86
2774	4243	700962969H1	SOYMON022	g1814402	BLASTN	515	1e-44	89
2775	4243	701102860H1	SOYMON028	g1814402	BLASTN	309	1e-42	92
2776	4243	700763506H1	SOYMON015	g1814402	BLASTN	456	1e-42	84
2777	4243	700994059H1	SOYMON011	g1814402	BLASTN	487	1e-42	87
2778	4243	700751551H1	SOYMON014	g1814402	BLASTN	568	1e-41	85
2779	4243	701108872H1	SOYMON036	g1814402	BLASTN	603	1e-41	85
2780	4243	700994053H1	SOYMON011	g1814402	BLASTN	587	1e-40	85
2781	4243	700729064H1	SOYMON009	g1814402	BLASTN	413	1e-38	90
2782	4243	700874176H1	SOYMON018	g1814402	BLASTN	468	1e-38	92

2783	4243	700742963H1	SOYMON012	g1814402	BLASTN	565	1e-38	86
2784	4243	701212923H1	SOYMON035	g1814402	BLASTN	572	1e-38	84
2785	4243	700994851H1	SOYMON011	g1814402	BLASTN	548	1e-36	76
2786	4243	701000193H1	SOYMON018	g1814402	BLASTN	296	1e-33	87
2787	4243	700756219H1	SOYMON014	g1814402	BLASTN	394	1e-32	80
2788	4243	701014751H1	SOYMON019	g1814402	BLASTN	461	1e-29	90
2789	4243	700561163H1	SOYMON002	g1814402	BLASTN	231	1e-25	89
2790	4243	700650284H1	SOYMON003	g974782	BLASTX	157	1e-14	96
2791	4243	700869218H1	SOYMON016	g1814402	BLASTN	248	1e-11	93
2792	550	LIB3028-007-Q1-B1-B6	LIB3028	g886470	BLASTN	1440	1e-111	81
2793	550	LIB3040-017-Q1-E1-E8	LIB3040	g886470	BLASTN	1260	1e-96	80
2794	550	700650656H1	SOYMON003	g1814402	BLASTN	1072	1e-93	83
2795	550	LIB3051-091-Q1-K1-C2	LIB3051	g886470	BLASTN	1124	1e-89	80
2796	550	LIB3051-072-Q1-K1-B3	LIB3051	g974781	BLASTN	1114	1e-83	82
2797	550	LIB3051-006-Q1-E1-G9	LIB3051	g974781	BLASTN	703	1e-82	81
2798	550	700563811H1	SOYMON002	g1814402	BLASTN	1071	1e-80	84
2799	550	700754104H1	SOYMON014	g974781	BLASTN	1052	1e-78	86
2800	550	701002973H1	SOYMON019	g1814402	BLASTN	1039	1e-77	85
2801	550	700986733H1	SOYMON009	g974781	BLASTN	1039	1e-77	83
2802	550	700557595H1	SOYMON001	g886470	BLASTN	1019	1e-76	83
2803	550	700563477H1	SOYMON002	g2738247	BLASTN	1024	1e-76	85
2804	550	700976112H1	SOYMON009	g886470	BLASTN	1024	1e-76	84
2805	550	701004484H1	SOYMON019	g1814402	BLASTN	1007	1e-75	84
2806	550	700889161H1	SOYMON024	g974781	BLASTN	996	1e-74	85
2807	550	700833110H1	SOYMON019	g974781	BLASTN	998	1e-74	87
2808	550	701124559H1	SOYMON037	g974781	BLASTN	1002	1e-74	86
2809	550	700729207H1	SOYMON009	g974781	BLASTN	1004	1e-74	85
2810	550	700730012H1	SOYMON009	g886470	BLASTN	987	1e-73	85
2811	550	700987128H1	SOYMON009	g2738247	BLASTN	989	1e-73	85
2812	550	700564788H1	SOYMON002	g974781	BLASTN	990	1e-73	84
2813	550	701099104H1	SOYMON028	g1814402	BLASTN	994	1e-73	86
2814	550	LIB3065-008-Q1-N1-B4	LIB3065	g2738247	BLASTN	839	1e-72	83
2815	550	701104283H1	SOYMON036	g974781	BLASTN	976	1e-72	83
2816	550	700726387H1	SOYMON009	g974781	BLASTN	980	1e-72	84
2817	550	700900884H1	SOYMON027	g1814402	BLASTN	982	1e-72	85
2818	550	LIB3051-029-Q1-K1-D6	LIB3051	g886470	BLASTN	824	1e-71	81
2819	550	701213995H1	SOYMON035	g1814402	BLASTN	962	1e-71	84
2820	550	700683596H1	SOYMON008	g1814402	BLASTN	968	1e-71	85
2821	550	700646529H1	SOYMON014	g1814402	BLASTN	867	1e-70	84
2822	550	700756704H1	SOYMON014	g1814402	BLASTN	893	1e-70	87
2823	550	700991647H1	SOYMON011	g1814402	BLASTN	947	1e-70	84
2824	550	700962195H1	SOYMON022	g974781	BLASTN	947	1e-70	87
2825	550	700994369H1	SOYMON011	g1814402	BLASTN	949	1e-70	84
2826	550	700672477H1	SOYMON006	g1814402	BLASTN	951	1e-70	85
2827	550	700946215H1	SOYMON024	g2738247	BLASTN	957	1e-70	83
2828	550	701152765H1	SOYMON031	g974781	BLASTN	958	1e-70	88
2829	550	701010552H1	SOYMON019	g974781	BLASTN	501	1e-69	83
2830	550	LIB3056-004-Q1-N1-B12	LIB3056	g2738247	BLASTN	698	1e-69	77
2831	550	701100656H1	SOYMON028	g974781	BLASTN	890	1e-69	85
2832	550	700985362H1	SOYMON009	g1814402	BLASTN	937	1e-69	82
2833	550	700746178H1	SOYMON013	g974781	BLASTN	938	1e-69	85
2834	550	700674440H1	SOYMON007	g974781	BLASTN	938	1e-69	83
2835	550	700556934H1	SOYMON001	g1814402	BLASTN	938	1e-69	82
2836	550	700652624H1	SOYMON003	g1814402	BLASTN	939	1e-69	82

2837	550	700952331H1	SOYMON022	g886470	BLASTN	946	1e-69	83
2838	550	700725576H1	SOYMON009	g886470	BLASTN	946	1e-69	85
2839	550	701003602H1	SOYMON019	g2738247	BLASTN	924	1e-68	83
2840	550	700745053H1	SOYMON013	g974781	BLASTN	924	1e-68	85
2841	550	700895781H1	SOYMON027	g1814402	BLASTN	926	1e-68	84
2842	550	700664593H1	SOYMON005	g974781	BLASTN	926	1e-68	87
2843	550	700864264H1	SOYMON016	g1814402	BLASTN	930	1e-68	84
2844	550	700674466H1	SOYMON007	g974781	BLASTN	933	1e-68	83
2845	550	700564170H1	SOYMON002	g974781	BLASTN	861	1e-67	83
2846	550	700654531H1	SOYMON004	g974781	BLASTN	911	1e-67	81
2847	550	700996341H1	SOYMON018	g886470	BLASTN	911	1e-67	83
2848	550	701136257H1	SOYMON038	g886470	BLASTN	912	1e-67	82
2849	550	700751114H1	SOYMON014	g1814402	BLASTN	914	1e-67	84
2850	550	700657606H1	SOYMON004	g1814402	BLASTN	916	1e-67	87
2851	550	700983827H1	SOYMON009	g974781	BLASTN	918	1e-67	85
2852	550	700981249H1	SOYMON009	g1814402	BLASTN	921	1e-67	80
2853	550	700836103H1	SOYMON019	g886470	BLASTN	922	1e-67	82
2854	550	701011869H1	SOYMON019	g886470	BLASTN	486	1e-66	86
2855	550	701097045H1	SOYMON028	g886470	BLASTN	601	1e-66	85
2856	550	701012695H1	SOYMON019	g974781	BLASTN	777	1e-66	85
2857	550	700945396H1	SOYMON024	g974781	BLASTN	902	1e-66	85
2858	550	700755390H1	SOYMON014	g974781	BLASTN	903	1e-66	86
2859	550	700967721H1	SOYMON033	g886470	BLASTN	910	1e-66	82
2860	550	700750610H1	SOYMON014	g974781	BLASTN	910	1e-66	84
2861	550	700908231H1	SOYMON022	g974781	BLASTN	527	1e-65	83
2862	550	701003835H1	SOYMON019	g886470	BLASTN	723	1e-65	82
2863	550	700790802H1	SOYMON011	g2738247	BLASTN	891	1e-65	82
2864	550	701053438H1	SOYMON032	g974781	BLASTN	893	1e-65	82
2865	550	701009430H1	SOYMON019	g974781	BLASTN	894	1e-65	85
2866	550	700891415H1	SOYMON024	g1814402	BLASTN	895	1e-65	84
2867	550	701100681H1	SOYMON028	g2738247	BLASTN	482	1e-64	84
2868	550	700893420H1	SOYMON024	g974781	BLASTN	570	1e-64	89
2869	550	700752741H1	SOYMON014	g886470	BLASTN	880	1e-64	82
2870	550	700955938H1	SOYMON022	g1814402	BLASTN	882	1e-64	81
2871	550	701015042H1	SOYMON019	g2738247	BLASTN	886	1e-64	82
2872	550	LIB3051-072-Q1-K1-B1	LIB3051	g974781	BLASTN	645	1e-63	76
2873	550	700741918H1	SOYMON012	g886470	BLASTN	722	1e-63	84
2874	550	701103319H1	SOYMON028	g974781	BLASTN	792	1e-63	82
2875	550	700833218H1	SOYMON019	g2738247	BLASTN	863	1e-63	81
2876	550	701008071H1	SOYMON019	g886470	BLASTN	867	1e-63	83
2877	550	700832073H1	SOYMON019	g974781	BLASTN	871	1e-63	83
2878	550	700889695H1	SOYMON024	g974781	BLASTN	872	1e-63	83
2879	550	701007489H2	SOYMON019	g974781	BLASTN	873	1e-63	84
2880	550	700895858H1	SOYMON027	g974781	BLASTN	874	1e-63	84
2881	550	700753955H1	SOYMON014	g974781	BLASTN	470	1e-62	87
2882	550	700564433H1	SOYMON002	g886470	BLASTN	757	1e-62	84
2883	550	700963115H1	SOYMON022	g974781	BLASTN	851	1e-62	83
2884	550	700894728H1	SOYMON024	g886470	BLASTN	860	1e-62	84
2885	550	701056915H1	SOYMON033	g886470	BLASTN	862	1e-62	84
2886	550	700741134H1	SOYMON012	g886470	BLASTN	862	1e-62	83
2887	550	700847591H1	SOYMON021	g974781	BLASTN	842	1e-61	84
2888	550	700941253H1	SOYMON024	g2738247	BLASTN	844	1e-61	80
2889	550	701004315H1	SOYMON019	g2738247	BLASTN	846	1e-61	83
2890	550	700895720H1	SOYMON027	g974781	BLASTN	848	1e-61	83

2891	550	701013541H1	SOYMON019	g974781	BLASTN	849	1e-61	84
2892	550	700892552H1	SOYMON024	g886470	BLASTN	719	1e-60	83
2893	550	701141313H1	SOYMON038	g974781	BLASTN	827	1e-60	83
2894	550	701012547H1	SOYMON019	g1814402	BLASTN	831	1e-60	83
2895	550	701008558H1	SOYMON019	g1814402	BLASTN	831	1e-60	83
2896	550	700902022H1	SOYMON027	g2738247	BLASTN	831	1e-60	82
2897	550	700959515H1	SOYMON022	g886470	BLASTN	832	1e-60	81
2898	550	701042630H1	SOYMON029	g1814402	BLASTN	819	1e-59	81
2899	550	700941292H1	SOYMON024	g2738247	BLASTN	820	1e-59	81
2900	550	700788526H1	SOYMON011	g974781	BLASTN	491	1e-58	82
2901	550	700894839H1	SOYMON024	g1814402	BLASTN	498	1e-58	82
2902	550	700865873H1	SOYMON016	g974781	BLASTN	808	1e-58	85
2903	550	701015435H1	SOYMON019	g886470	BLASTN	809	1e-58	80
2904	550	700755960H1	SOYMON014	g2738247	BLASTN	809	1e-58	78
2905	550	700876051H1	SOYMON018	g886470	BLASTN	434	1e-57	81
2906	550	701041327H1	SOYMON029	g886470	BLASTN	499	1e-57	83
2907	550	701098902H1	SOYMON028	g2738247	BLASTN	767	1e-57	77
2908	550	700853392H1	SOYMON023	g886470	BLASTN	793	1e-57	82
2909	550	700872645H1	SOYMON018	g974781	BLASTN	798	1e-57	83
2910	550	700989675H1	SOYMON011	g2738247	BLASTN	800	1e-57	79
2911	550	700753487H1	SOYMON014	g1814402	BLASTN	589	1e-56	83
2912	550	700736276H1	SOYMON010	g1814402	BLASTN	782	1e-56	79
2913	550	700891361H1	SOYMON024	g1814402	BLASTN	783	1e-56	81
2914	550	700829712H1	SOYMON019	g974781	BLASTN	790	1e-56	80
2915	550	LIB3050-019-Q1-K1-A1	LIB3050	g974781	BLASTN	663	1e-55	81
2916	550	701001013H1	SOYMON018	g1814402	BLASTN	768	1e-55	84
2917	550	LIB3028-031-Q1-B1-G12	LIB3028	g886470	BLASTN	775	1e-55	82
2918	550	701212782H1	SOYMON035	g886470	BLASTN	621	1e-54	82
2919	550	701008695H1	SOYMON019	g974781	BLASTN	718	1e-54	80
2920	550	700990972H1	SOYMON011	g1814402	BLASTN	766	1e-54	81
2921	550	700789576H2	SOYMON011	g886470	BLASTN	766	1e-54	80
2922	550	700994266H1	SOYMON011	g1814402	BLASTN	408	1e-53	85
2923	550	700731985H1	SOYMON010	g974781	BLASTN	590	1e-53	81
2924	550	700907927H1	SOYMON022	g886470	BLASTN	612	1e-53	80
2925	550	701012079H1	SOYMON019	g974781	BLASTN	669	1e-53	86
2926	550	700753939H1	SOYMON014	g886470	BLASTN	690	1e-53	78
2927	550	701000754H1	SOYMON018	g974781	BLASTN	745	1e-53	76
2928	550	701040287H1	SOYMON029	g886470	BLASTN	747	1e-53	82
2929	550	700891329H1	SOYMON024	g974781	BLASTN	749	1e-53	79
2930	550	700897258H1	SOYMON027	g886470	BLASTN	752	1e-53	86
2931	550	700944949H1	SOYMON024	g974781	BLASTN	426	1e-52	82
2932	550	701108671H1	SOYMON036	g1814402	BLASTN	731	1e-52	77
2933	550	700905233H1	SOYMON022	g886470	BLASTN	732	1e-52	77
2934	550	700958589H1	SOYMON022	g886470	BLASTN	738	1e-52	80
2935	550	700666436H1	SOYMON005	g2738247	BLASTN	739	1e-52	82
2936	550	700829902H1	SOYMON019	g886470	BLASTN	740	1e-52	82
2937	550	700740110H1	SOYMON012	g974781	BLASTN	742	1e-52	83
2938	550	700989055H1	SOYMON011	g886470	BLASTN	538	1e-50	79
2939	550	701213370H1	SOYMON035	g974781	BLASTN	599	1e-50	83
2940	550	701098072H1	SOYMON028	g974781	BLASTN	709	1e-50	74
2941	550	700896128H1	SOYMON027	g886470	BLASTN	714	1e-50	83
2942	550	701060755H1	SOYMON033	g974781	BLASTN	716	1e-50	74
2943	550	700953594H1	SOYMON022	g1814402	BLASTN	695	1e-49	78
2944	550	701046911H1	SOYMON032	g2738247	BLASTN	687	1e-48	81

2945	550	701065707H1	SOYMON034	g1814402	BLASTN	443	1e-47	84
2946	550	700962114H1	SOYMON022	g886470	BLASTN	678	1e-47	84
2947	550	700831826H1	SOYMON019	g2738247	BLASTN	682	1e-47	77
2948	550	701054296H1	SOYMON032	g886470	BLASTN	454	1e-46	83
2949	550	700888738H1	SOYMON024	g974781	BLASTN	552	1e-46	77
2950	550	700892022H1	SOYMON024	g886470	BLASTN	605	1e-46	81
2951	550	700890275H1	SOYMON024	g2738247	BLASTN	666	1e-46	77
2952	550	LIB3051-006-Q1-K1-G9	LIB3051	g974781	BLASTN	670	1e-45	80
2953	550	700889113H1	SOYMON024	g886470	BLASTN	582	1e-43	81
2954	550	700952720H1	SOYMON022	g886470	BLASTN	611	1e-42	76
2955	550	701014761H1	SOYMON019	g886470	BLASTN	318	1e-41	84
2956	550	700753882H1	SOYMON014	g886470	BLASTN	381	1e-41	79
2957	550	700743792H1	SOYMON012	g1814402	BLASTN	610	1e-41	86
2958	550	700990963H1	SOYMON011	g886470	BLASTN	578	1e-39	77
2959	550	700941880H1	SOYMON024	g2738247	BLASTN	583	1e-39	81
2960	550	700898962H1	SOYMON027	g2738247	BLASTN	571	1e-38	80
2961	550	700990865H1	SOYMON011	g2738247	BLASTN	467	1e-37	77
2962	550	700565779H1	SOYMON002	g886470	BLASTN	557	1e-37	70
2963	550	700993903H1	SOYMON011	g974781	BLASTN	562	1e-37	84
2964	550	700941589H1	SOYMON024	g2738247	BLASTN	550	1e-36	81
2965	550	701052554H1	SOYMON032	g886470	BLASTN	534	1e-35	67
2966	550	700991055H1	SOYMON011	g886470	BLASTN	356	1e-34	79
2967	550	701010438H1	SOYMON019	g2738247	BLASTN	508	1e-33	79
2968	550	700756634H1	SOYMON014	g2738247	BLASTN	494	1e-32	76
2969	550	701042980H1	SOYMON029	g886470	BLASTN	461	1e-29	83
2970	550	700682940H1	SOYMON008	g2738247	BLASTN	466	1e-29	83
2971	550	701049575H1	SOYMON032	g886470	BLASTN	433	1e-27	82
2972	550	700982552H1	SOYMON009	g886470	BLASTN	356	1e-25	78
2973	550	700675637H1	SOYMON007	g886470	BLASTN	375	1e-25	79
2974	550	701142153H1	SOYMON038	g886470	BLASTN	377	1e-22	76
2975	550	700682724H1	SOYMON008	g974781	BLASTN	361	1e-19	88
2976	550	701051764H1	SOYMON032	g1814402	BLASTN	211	1e-17	80
2977	550	700867241H1	SOYMON016	g2738248	BLASTX	152	1e-13	88
2978	550	701054954H1	SOYMON032	g2738248	BLASTX	138	1e-12	86
2979	550	700790450H2	SOYMON011	g974781	BLASTN	238	1e-10	80
2980	550	700653979H1	SOYMON003	g1814403	BLASTX	118	1e-9	92
2981	550	700894218H1	SOYMON024	g2738248	BLASTX	122	1e-9	78
2982	550	700863078H1	SOYMON022	g2738247	BLASTN	236	1e-8	78
2983	5758	701209304H1	SOYMON035	g886470	BLASTN	766	1e-54	84
2984	5758	701106455H1	SOYMON036	g886470	BLASTN	723	1e-51	82
2985	5758	700833538H1	SOYMON019	g1814402	BLASTN	609	1e-43	83
2986	5758	701051425H1	SOYMON032	g886470	BLASTN	629	1e-43	83
2987	5758	700654506H1	SOYMON004	g886470	BLASTN	438	1e-26	70
2988	5758	701047795H1	SOYMON032	g974782	BLASTX	161	1e-15	100
2989	5758	701202409H1	SOYMON035	g1814402	BLASTN	310	1e-15	79
2990	8266	700558628H1	SOYMON001	g886470	BLASTN	780	1e-56	74
2991	8266	701207720H1	SOYMON035	g1814402	BLASTN	766	1e-54	74
2992	8266	700557429H1	SOYMON001	g1814402	BLASTN	728	1e-51	75

ADENOSYLHOMOCYSTEINASE (EC 3.3.1.1)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
1354	-700154280	700154280H1	SATMON007	g170772	BLASTN	229	1e-23	77

1355	-L30594291	LIB3059-032-Q1-K1-A8	LIB3059	g170772	BLASTN	516	1e-74	73
1356	-L30664307	LIB3066-047-Q1-K1-E7	LIB3066	g170772	BLASTN	628	1e-49	70
1357	503	LIB3079-013-Q1-K1-D3	LIB3079	g170772	BLASTN	1505	1e-139	89
1358	503	LIB3062-017-Q1-K1-A10	LIB3062	g170772	BLASTN	1571	1e-129	89
1359	503	LIB3067-001-Q1-K1-D11	LIB3067	g170772	BLASTN	1654	1e-129	89
1360	503	LIB148-060-Q1-E1-B9	LIB148	g170772	BLASTN	1620	1e-126	90
1361	503	LIB3069-043-Q1-K1-G4	LIB3069	g170772	BLASTN	1360	1e-124	84
1362	503	LIB143-006-Q1-E1-F3	LIB143	g170772	BLASTN	831	1e-120	88
1363	503	LIB189-009-Q1-E1-E9	LIB189	g170772	BLASTN	1551	1e-120	90
1364	503	LIB3060-003-Q1-K1-F9	LIB3060	g170772	BLASTN	1538	1e-119	91
1365	503	700089023H1	SATMON011	g170772	BLASTN	1495	1e-115	91
1366	503	LIB143-061-Q1-E1-C9	LIB143	g170772	BLASTN	1474	1e-114	90
1367	503	LIB3069-034-Q1-K1-E5	LIB3069	g170772	BLASTN	1483	1e-114	88
1368	503	LIB143-061-Q1-E1-E5	LIB143	g170772	BLASTN	1440	1e-113	89
1369	503	LIB3067-040-Q1-K1-H5	LIB3067	g170772	BLASTN	1467	1e-113	88
1370	503	LIB3067-048-Q1-K1-A11	LIB3067	g170772	BLASTN	1207	1e-109	86
1371	503	LIB3068-050-Q1-K1-G6	LIB3068	g170772	BLASTN	1279	1e-109	86
1372	503	LIB3069-036-Q1-K1-F6	LIB3069	g170772	BLASTN	1310	1e-109	92
1373	503	LIB3066-047-Q1-K1-H5	LIB3066	g170772	BLASTN	1353	1e-108	86
1374	503	LIB3059-011-Q1-K1-A5	LIB3059	g170772	BLASTN	1401	1e-107	90
1375	503	LIB3067-056-Q1-K1-E11	LIB3067	g170772	BLASTN	957	1e-106	86
1376	503	LIB189-010-Q1-E1-E12	LIB189	g170772	BLASTN	1144	1e-106	88
1377	503	700084426H1	SATMON011	g170772	BLASTN	1368	1e-105	91
1378	503	700086273H1	SATMON011	g170772	BLASTN	1364	1e-104	91
1379	503	700573027H1	SATMON030	g170772	BLASTN	939	1e-103	89
1380	503	700209360H1	SATMON016	g170772	BLASTN	1350	1e-103	89
1381	503	700619916H1	SATMON034	g170772	BLASTN	1050	1e-102	89
1382	503	700086051H1	SATMON011	g170772	BLASTN	1336	1e-102	90
1383	503	LIB3069-034-Q1-K1-C8	LIB3069	g170772	BLASTN	1322	1e-101	86
1384	503	700026324H1	SATMON003	g170772	BLASTN	1328	1e-101	91
1385	503	700104549H1	SATMON010	g170772	BLASTN	836	1e-100	88
1386	503	700622108H1	SATMON034	g170772	BLASTN	1158	1e-100	88
1387	503	700093980H1	SATMON008	g170772	BLASTN	1312	1e-100	90
1388	503	700077427H1	SATMON007	g170772	BLASTN	1317	1e-100	90
1389	503	700095389H1	SATMON008	g170772	BLASTN	1302	1e-99	91
1390	503	LIB3067-055-Q1-K1-D3	LIB3067	g170772	BLASTN	762	1e-98	87
1391	503	LIB3060-054-Q1-K1-F6	LIB3060	g170772	BLASTN	1009	1e-98	83
1392	503	700083339H1	SATMON011	g170772	BLASTN	1282	1e-98	91
1393	503	700102631H1	SATMON010	g170772	BLASTN	1283	1e-98	89
1394	503	700265625H1	SATMON017	g170772	BLASTN	1286	1e-98	90
1395	503	700095002H1	SATMON008	g170772	BLASTN	1289	1e-98	88
1396	503	700094761H1	SATMON008	g170772	BLASTN	1289	1e-98	88
1397	503	700073832H1	SATMON007	g170772	BLASTN	1270	1e-97	88
1398	503	700047817H1	SATMON003	g170772	BLASTN	1272	1e-97	91
1399	503	700091149H1	SATMON011	g170772	BLASTN	1262	1e-96	89
1400	503	700098584H1	SATMON009	g170772	BLASTN	1264	1e-96	91
1401	503	700085932H1	SATMON011	g170772	BLASTN	1266	1e-96	89
1402	503	700094081H1	SATMON008	g170772	BLASTN	1269	1e-96	91
1403	503	700202442H1	SATMON003	g170772	BLASTN	1145	1e-95	88
1404	503	700049770H1	SATMON003	g170772	BLASTN	1246	1e-95	89
1405	503	LIB3079-020-Q1-K1-B12	LIB3079	g170772	BLASTN	1249	1e-95	85
1406	503	700090226H1	SATMON011	g170772	BLASTN	1252	1e-95	90
1407	503	700088191H1	SATMON011	g170772	BLASTN	1253	1e-95	90
1408	503	700076743H1	SATMON007	g170772	BLASTN	1256	1e-95	90

1409	503	LIB189-009-Q1-E1-E10	LIB189	g170772	BLASTN	789	1e-94	88
1410	503	700072038H1	SATMON007	g170772	BLASTN	1237	1e-94	89
1411	503	700082967H1	SATMON011	g170772	BLASTN	1239	1e-94	89
1412	503	LIB3068-062-Q1-K1-A3	LIB3068	g170772	BLASTN	1148	1e-93	82
1413	503	700094713H1	SATMON008	g170772	BLASTN	1222	1e-93	88
1414	503	700095620H1	SATMON008	g170772	BLASTN	1173	1e-92	89
1415	503	700242509H1	SATMON010	g170772	BLASTN	1213	1e-92	92
1416	503	700071923H1	SATMON007	g170772	BLASTN	1214	1e-92	90
1417	503	700575314H1	SATMON030	g170772	BLASTN	1149	1e-91	88
1418	503	700086654H1	SATMON011	g170772	BLASTN	1199	1e-91	90
1419	503	700241072H1	SATMON010	g170772	BLASTN	1205	1e-91	91
1420	503	700047361H1	SATMON003	g170772	BLASTN	1110	1e-90	89
1421	503	700217056H1	SATMON016	g170772	BLASTN	1187	1e-90	91
1422	503	LIB3067-005-Q1-K1-F2	LIB3067	g170772	BLASTN	1188	1e-90	84
1423	503	700075495H1	SATMON007	g170772	BLASTN	1193	1e-90	86
1424	503	700084783H1	SATMON011	g170772	BLASTN	1194	1e-90	91
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1426	503	700448818H1	SATMON028	g170772	BLASTN	1174	1e-89	91
1427	503	700159079H1	SATMON012	g170772	BLASTN	1177	1e-89	92
1428	503	700094408H1	SATMON008	g170772	BLASTN	1177	1e-89	92
1429	503	700348440H1	SATMON023	g170772	BLASTN	1182	1e-89	89
1430	503	700077082H1	SATMON007	g170772	BLASTN	1182	1e-89	92
1431	503	700082111H1	SATMON011	g170772	BLASTN	1183	1e-89	89
1432	503	700239752H1	SATMON010	g170772	BLASTN	1164	1e-88	89
1433	503	700029456H1	SATMON003	g170772	BLASTN	1166	1e-88	90
1434	503	700209430H1	SATMON016	g170772	BLASTN	1170	1e-88	90
1435	503	700208660H1	SATMON016	g170772	BLASTN	930	1e-87	90
1436	503	700213138H1	SATMON016	g170772	BLASTN	1042	1e-87	89
1437	503	700102234H1	SATMON010	g170772	BLASTN	634	1e-85	90
1438	503	700450479H1	SATMON028	g170772	BLASTN	1015	1e-85	90
1439	503	700095372H1	SATMON008	g170772	BLASTN	1126	1e-85	90
1440	503	700218734H1	SATMON011	g170772	BLASTN	1128	1e-85	94
1441	503	700256858H1	SATMON017	g170772	BLASTN	1133	1e-85	90
1442	503	700221063H1	SATMON011	g170772	BLASTN	1137	1e-85	90
1443	503	700105439H1	SATMON010	g170772	BLASTN	1118	1e-84	89
1444	503	700085174H1	SATMON011	g170772	BLASTN	1125	1e-84	90
1445	503	700242421H1	SATMON010	g170772	BLASTN	1125	1e-84	92
1446	503	700077492H1	SATMON007	g170772	BLASTN	774	1e-83	88
1447	503	700209295H1	SATMON016	g170772	BLASTN	914	1e-83	89
1448	503	700455826H1	SATMON029	g170772	BLASTN	978	1e-83	91
1449	503	700213370H1	SATMON016	g170772	BLASTN	1110	1e-83	92
1450	503	700352095H1	SATMON023	g170772	BLASTN	1111	1e-83	89
1451	503	700076842H1	SATMON007	g170772	BLASTN	1112	1e-83	90
1452	503	700215872H1	SATMON016	g170772	BLASTN	1113	1e-83	89
1453	503	700073645H1	SATMON007	g170772	BLASTN	1113	1e-83	89
1454	503	700048153H1	SATMON003	g170772	BLASTN	651	1e-82	90
1455	503	700073307H1	SATMON007	g170772	BLASTN	762	1e-82	90
1456	503	700350009H1	SATMON023	g170772	BLASTN	924	1e-82	88
1457	503	LIB143-059-Q1-E1-C5	LIB143	g170772	BLASTN	1029	1e-82	83
1458	503	700073955H1	SATMON007	g170772	BLASTN	1090	1e-82	90
1459	503	LIB3059-042-Q1-K1-H12	LIB3059	g170772	BLASTN	1090	1e-82	85
1460	503	700238024H1	SATMON010	g170772	BLASTN	1091	1e-82	90
1461	503	700155863H1	SATMON007	g170772	BLASTN	1091	1e-82	93
1462	503	700217890H1	SATMON016	g170772	BLASTN	1093	1e-82	91

1463	503	700239314H1	SATMON010	g170772	BLASTN	1094	1e-82	88
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1465	503	700235469H1	SATMON010	g170772	BLASTN	1098	1e-82	91
1466	503	700164224H1	SATMON013	g170772	BLASTN	710	1e-81	92
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1469	503	700159326H1	SATMON012	g170772	BLASTN	777	1e-80	91
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1473	503	700242676H1	SATMON010	g170772	BLASTN	940	1e-80	89
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1477	503	700072491H1	SATMON007	g170772	BLASTN	604	1e-79	88
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1479	503	700451515H1	SATMON028	g170772	BLASTN	1057	1e-79	85
1480	503	700468929H1	SATMON025	g170772	BLASTN	1061	1e-79	84
1481	503	700205801H1	SATMON003	g170772	BLASTN	1064	1e-79	91
1482	503	700611326H1	SATMON022	g170772	BLASTN	725	1e-78	88
1483	503	700082291H1	SATMON011	g170772	BLASTN	1043	1e-78	87
1484	503	700071695H1	SATMON007	g170772	BLASTN	1048	1e-78	89
1485	503	700551561H1	SATMON022	g170772	BLASTN	746	1e-77	88
1486	503	700221019H1	SATMON011	g170772	BLASTN	856	1e-77	89
1487	503	LIB3078-007-Q1-K1-C5	LIB3078	g170772	BLASTN	936	1e-77	83
1488	503	700049925H1	SATMON003	g170772	BLASTN	954	1e-77	89
1489	503	700154101H1	SATMON007	g170772	BLASTN	1036	1e-77	88
1490	503	700380151H1	SATMON021	g170772	BLASTN	613	1e-76	88
1491	503	700243831H1	SATMON010	g170772	BLASTN	842	1e-76	89
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1493	503	700087847H1	SATMON011	g170772	BLASTN	1009	1e-75	82
1494	503	700208747H1	SATMON016	g170772	BLASTN	1010	1e-75	89
1495	503	700071795H1	SATMON007	g170772	BLASTN	1011	1e-75	89
1496	503	700157002H1	SATMON012	g170772	BLASTN	1012	1e-75	90
1497	503	700201608H1	SATMON003	g170772	BLASTN	1015	1e-75	85
1498	503	700451541H1	SATMON028	g170772	BLASTN	1015	1e-75	86
1499	503	700212182H1	SATMON016	g170772	BLASTN	1015	1e-75	88
1500	503	700381485H1	SATMON023	g170772	BLASTN	1017	1e-75	91
1501	503	700096793H1	SATMON008	g170772	BLASTN	761	1e-74	87
1502	503	700093025H1	SATMON008	g170772	BLASTN	996	1e-74	89
1503	503	700017129H1	SATMON001	g170772	BLASTN	998	1e-74	92
1504	503	700216525H1	SATMON016	g170772	BLASTN	1000	1e-74	86
1505	503	700087912H1	SATMON011	g170772	BLASTN	1001	1e-74	91
1506	503	700172618H1	SATMON013	g170772	BLASTN	1001	1e-74	91
1507	503	700801894H1	SATMON036	g170772	BLASTN	1002	1e-74	90
1508	503	700162040H1	SATMON012	g170772	BLASTN	1003	1e-74	92
1509	503	700212084H1	SATMON016	g170772	BLASTN	1004	1e-74	89
1510	503	700027971H1	SATMON003	g170772	BLASTN	982	1e-73	92
1511	503	700077321H1	SATMON007	g170772	BLASTN	985	1e-73	89
1512	503	700619884H1	SATMON034	g170772	BLASTN	987	1e-73	87
1513	503	700457201H1	SATMON029	g170772	BLASTN	988	1e-73	87
1514	503	700082970H1	SATMON011	g170772	BLASTN	990	1e-73	89
1515	503	700083350H1	SATMON011	g170772	BLASTN	971	1e-72	89
1516	503	700017732H1	SATMON001	g170772	BLASTN	973	1e-72	88

1517	503	700094688H1	SATMON008	g170772	BLASTN	975	1e-72	89
1518	503	700170985H1	SATMON013	g170772	BLASTN	979	1e-72	89
1519	503	700451847H1	SATMON028	g170772	BLASTN	872	1e-71	84
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1521	503	700106189H1	SATMON010	g170772	BLASTN	960	1e-71	88
1522	503	700160075H1	SATMON012	g170772	BLASTN	968	1e-71	90
1523	503	700084952H1	SATMON011	g170772	BLASTN	552	1e-70	78
1524	503	700348238H1	SATMON023	g170772	BLASTN	946	1e-70	87
1525	503	700151310H1	SATMON007	g170772	BLASTN	948	1e-70	90
1526	503	700048962H1	SATMON003	g170772	BLASTN	677	1e-69	88
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1530	503	700073939H1	SATMON007	g170772	BLASTN	931	1e-68	88
1531	503	700027715H1	SATMON003	g170772	BLASTN	472	1e-67	90
1532	503	700072843H1	SATMON007	g170772	BLASTN	692	1e-67	87
1533	503	700439356H1	SATMON026	g170772	BLASTN	777	1e-67	85
1534	503	700073556H1	SATMON007	g170772	BLASTN	910	1e-67	88
1535	503	700154461H1	SATMON007	g170772	BLASTN	911	1e-67	87
1536	503	700201909H1	SATMON003	g170772	BLASTN	912	1e-67	88
1537	503	700104384H1	SATMON010	g170772	BLASTN	665	1e-66	89
1538	503	700152707H1	SATMON007	g170772	BLASTN	898	1e-66	88
1539	503	700076625H1	SATMON007	g170772	BLASTN	900	1e-66	85
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1541	503	700457294H1	SATMON029	g170772	BLASTN	446	1e-65	88
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1543	503	700072428H2	SATMON007	g170772	BLASTN	890	1e-65	88
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1545	503	700072443H2	SATMON007	g170772	BLASTN	894	1e-65	89
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1547	503	700240615H1	SATMON010	g170772	BLASTN	877	1e-64	88
1548	503	700155233H1	SATMON007	g170772	BLASTN	883	1e-64	90
1549	503	700241210H1	SATMON010	g170772	BLASTN	822	1e-63	87
1550	503	700478070H1	SATMON025	g170772	BLASTN	863	1e-63	82
1551	503	700447433H1	SATMON027	g170772	BLASTN	865	1e-63	84
1552	503	700215884H1	SATMON016	g170772	BLASTN	865	1e-63	88
1553	503	700575250H1	SATMON030	g170772	BLASTN	820	1e-61	84
1554	503	700209283H1	SATMON016	g170772	BLASTN	833	1e-60	86
1555	503	700213479H1	SATMON016	g170772	BLASTN	834	1e-60	88
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1558	503	700151036H1	SATMON007	g170772	BLASTN	816	1e-59	91
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1561	503	700618168H1	SATMON033	g170772	BLASTN	385	1e-58	80
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1563	503	700224131H1	SATMON011	g170772	BLASTN	794	1e-57	88
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1565	503	700027716H1	SATMON003	g170772	BLASTN	642	1e-56	79
1566	503	700073305H1	SATMON007	g170772	BLASTN	787	1e-56	83
1567	503	700257376H1	SATMON017	g170772	BLASTN	362	1e-55	87
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1569	503	700219086H1	SATMON011	g170772	BLASTN	769	1e-55	87
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1571	503	700424527H1	SATMONN01	g170772	BLASTN	777	1e-55	83
1572	503	700073183H1	SATMON007	g170772	BLASTN	607	1e-54	85
1573	503	700217412H1	SATMON016	g170772	BLASTN	755	1e-54	87
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1576	503	700446645H1	SATMON027	g170772	BLASTN	744	1e-53	87
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1578	503	700617325H1	SATMON033	g170772	BLASTN	751	1e-53	91
1579	503	700239901H1	SATMON010	g170772	BLASTN	641	1e-52	86
1580	503	700155130H1	SATMON007	g170772	BLASTN	646	1e-52	88
1581	503	700083360H1	SATMON011	g170772	BLASTN	739	1e-52	87
1582	503	700236915H1	SATMON010	g170772	BLASTN	740	1e-52	87
1583	503	700074780H1	SATMON007	g170772	BLASTN	528	1e-51	83
1584	503	700479515H1	SATMON034	g170772	BLASTN	718	1e-51	88
1585	503	700215545H1	SATMON016	g170772	BLASTN	724	1e-51	90
1586	503	700165354H1	SATMON013	g170772	BLASTN	728	1e-51	86
1587	503	700353994H1	SATMON024	g170772	BLASTN	713	1e-50	87
1588	503	700153619H1	SATMON007	g170772	BLASTN	694	1e-49	86
1589	503	700074779H1	SATMON007	g170772	BLASTN	705	1e-49	77
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1591	503	700221207H1	SATMON011	g170772	BLASTN	692	1e-48	86
1592	503	700264257H1	SATMON017	g170772	BLASTN	672	1e-47	87
1593	503	700152216H1	SATMON007	g170772	BLASTN	659	1e-46	88
1594	503	700150643H1	SATMON007	g170772	BLASTN	659	1e-46	88
1595	503	700156027H1	SATMON007	g170772	BLASTN	655	1e-45	93
1596	503	700260335H1	SATMON017	g170772	BLASTN	385	1e-44	79
1597	503	700623795H1	SATMON034	g170772	BLASTN	401	1e-44	88
1598	503	700150581H1	SATMON007	g170772	BLASTN	640	1e-44	88
1599	503	700151970H1	SATMON007	g170772	BLASTN	645	1e-44	87
1600	503	700151780H1	SATMON007	g170772	BLASTN	628	1e-43	88
1601	503	700575547H1	SATMON030	g170772	BLASTN	614	1e-42	90
1602	503	LIB143-026-Q1-E1-A5	LIB143	g170772	BLASTN	633	1e-42	77
1603	503	700347945H1	SATMON023	g170772	BLASTN	586	1e-40	84
1604	503	700074416H1	SATMON007	g170772	BLASTN	589	1e-40	86
1605	503	700352990H1	SATMON024	g170772	BLASTN	575	1e-39	92
1606	503	700156025H1	SATMON007	g170772	BLASTN	568	1e-38	91
1607	503	700432072H1	SATMONN01	g170772	BLASTN	374	1e-37	84
1608	503	700354249H1	SATMON024	g170772	BLASTN	528	1e-35	93
1609	503	700617977H1	SATMON033	g170772	BLASTN	535	1e-35	87
1610	503	700218312H1	SATMON016	g170772	BLASTN	236	1e-33	91
1611	503	700456080H1	SATMON029	g170772	BLASTN	513	1e-33	83
1612	503	700349395H1	SATMON023	g170772	BLASTN	500	1e-32	91
1613	503	700051637H1	SATMON003	g170772	BLASTN	249	1e-31	86
1614	503	700202153H1	SATMON003	g170772	BLASTN	474	1e-30	91
1615	503	700256951H1	SATMON017	g170772	BLASTN	454	1e-29	86
1616	503	700150542H1	SATMON007	g170772	BLASTN	343	1e-28	76
1617	503	700151629H1	SATMON007	g170772	BLASTN	445	1e-28	85
1618	503	700446654H1	SATMON027	g170772	BLASTN	437	1e-27	84
1619	503	700155814H1	SATMON007	g170772	BLASTN	428	1e-26	88
1620	503	700161019H1	SATMON012	g2588780	BLASTN	417	1e-25	92
1621	503	700377236H1	SATMON019	g170772	BLASTN	402	1e-24	84
1622	503	LIB3067-036-Q1-K1-A4	LIB3067	g1220121	BLASTN	224	1e-22	84
1623	503	700158933H1	SATMON012	g170772	BLASTN	368	1e-21	90
1624	503	700155365H1	SATMON007	g170772	BLASTN	347	1e-20	91

1625	503	700405366H1	SATMON029	g170772	BLASTN	311	1e-17	88
1626	503	700159812H1	SATMON012	g407412	BLASTX	160	1e-15	96
1627	503	700209759H1	SATMON016	g170772	BLASTN	239	1e-15	90
1628	503	700154527H1	SATMON007	g170772	BLASTN	250	1e-12	92
1629	503	700449637H1	SATMON028	g170772	BLASTN	201	1e-10	78
1630	503	700096829H1	SATMON008	g170772	BLASTN	216	1e-9	89
2993	-700661285	700661285H1	SOYMON005	g1857024	BLASTX	95	1e-12	100
2994	-700750570	700750570H1	SOYMON014	g170772	BLASTN	414	1e-24	81
2995	-700752735	700752735H1	SOYMON014	g170772	BLASTN	446	1e-27	78
2996	-700755052	700755052H1	SOYMON014	g170772	BLASTN	547	1e-45	74
2997	-700756501	700756501H1	SOYMON014	g535583	BLASTN	717	1e-50	84
2998	-700831127	700831127H1	SOYMON019	g535583	BLASTN	862	1e-63	83
2999	-700851779	700851779H1	SOYMON023	g170772	BLASTN	505	1e-33	77
3000	-700888715	700888715H1	SOYMON024	g535583	BLASTN	442	1e-31	91
3001	-700889420	700889420H1	SOYMON024	g1220121	BLASTN	893	1e-65	84
3002	-700895218	700895218H1	SOYMON024	g407411	BLASTN	816	1e-59	83
3003	-700941379	700941379H1	SOYMON024	g170772	BLASTN	424	1e-33	72
3004	-700986855	700986855H1	SOYMON009	g170772	BLASTN	701	1e-49	74
3005	-701070484	701070484H1	SOYMON034	g407411	BLASTN	362	1e-43	73
3006	-701136279	701136279H1	SOYMON038	g170772	BLASTN	651	1e-56	80
3007	-GM16478	LIB3054-007-Q1-N1-G3	LIB3054	g2244750	BLASTX	70	1e-27	61
3008	-GM23819	LIB3040-019-Q1-E1-C5	LIB3040	g535583	BLASTN	258	1e-10	88
3009	-GM29758	LIB3050-016-Q1-E1-B11	LIB3050	g535583	BLASTN	391	1e-42	70
3010	16	LIB3030-003-Q1-B1-B11	LIB3030	g3088578	BLASTN	1577	1e-122	87
3011	16	LIB3050-023-Q1-K1-H9	LIB3050	g535583	BLASTN	1498	1e-116	86
3012	16	LIB3030-003-Q1-B1-F7	LIB3030	g535583	BLASTN	1469	1e-113	86
3013	16	LIB3055-005-Q1-N1-C11	LIB3055	g170772	BLASTN	1205	1e-109	84
3014	16	LIB3065-011-Q1-N1-A3	LIB3065	g170772	BLASTN	622	1e-107	88
3015	16	700652256H1	SOYMON003	g170772	BLASTN	591	1e-90	88
3016	16	LIB3065-011-Q1-N1-A4	LIB3065	g170772	BLASTN	1182	1e-89	78
3017	16	700653827H1	SOYMON003	g170772	BLASTN	660	1e-87	81
3018	16	701099940H1	SOYMON028	g1220121	BLASTN	1154	1e-87	88
3019	16	701003671H1	SOYMON019	g170772	BLASTN	1131	1e-85	92
3020	16	700752105H1	SOYMON014	g170772	BLASTN	1116	1e-84	91
3021	16	700653057H1	SOYMON003	g170772	BLASTN	990	1e-83	88
3022	16	700945531H1	SOYMON024	g535583	BLASTN	1109	1e-83	89
3023	16	700980013H1	SOYMON009	g535583	BLASTN	1109	1e-83	88
3024	16	701127812H1	SOYMON037	g170772	BLASTN	1110	1e-83	91
3025	16	LIB3056-014-Q1-N1-F8	LIB3056	g170772	BLASTN	798	1e-81	82
3026	16	700653862H1	SOYMON003	g1220121	BLASTN	960	1e-80	88
3027	16	700994148H1	SOYMON011	g535583	BLASTN	1069	1e-80	86
3028	16	700984184H1	SOYMON009	g170772	BLASTN	756	1e-79	86
3029	16	701123715H1	SOYMON037	g1220121	BLASTN	1059	1e-79	87
3030	16	700839038H1	SOYMON020	g170772	BLASTN	1060	1e-79	93
3031	16	700978445H1	SOYMON009	g170772	BLASTN	1062	1e-79	89
3032	16	701123035H1	SOYMON037	g170772	BLASTN	829	1e-78	90
3033	16	701041545H1	SOYMON029	g170772	BLASTN	1030	1e-77	86
3034	16	700898192H1	SOYMON027	g1220121	BLASTN	1031	1e-77	89
3035	16	700985750H1	SOYMON009	g169662	BLASTN	1033	1e-77	85
3036	16	700730995H1	SOYMON009	g170772	BLASTN	1040	1e-77	91
3037	16	700555909H1	SOYMON001	g535583	BLASTN	593	1e-76	84
3038	16	700746538H1	SOYMON013	g535583	BLASTN	834	1e-76	88
3039	16	700941380H1	SOYMON024	g170772	BLASTN	991	1e-76	91
3040	16	701118851H1	SOYMON037	g170772	BLASTN	1019	1e-76	89

3041	16	701065379H1	SOYMON034	g535583	BLASTN	1022	1e-76	86
3042	16	701209645H1	SOYMON035	g170772	BLASTN	795	1e-75	86
3043	16	701055017H1	SOYMON032	g1220121	BLASTN	877	1e-75	86
3044	16	701015213H1	SOYMON019	g535583	BLASTN	1008	1e-75	87
3045	16	700982770H1	SOYMON009	g1220121	BLASTN	1009	1e-75	85
3046	16	701212420H1	SOYMON035	g535583	BLASTN	1012	1e-75	86
3047	16	700977916H1	SOYMON009	g170772	BLASTN	700	1e-74	89
3048	16	700974401H1	SOYMON005	g1220121	BLASTN	857	1e-74	89
3049	16	700645749H1	SOYMON010	g170772	BLASTN	996	1e-74	82
3050	16	700646620H1	SOYMON014	g170772	BLASTN	996	1e-74	89
3051	16	701126103H1	SOYMON037	g170772	BLASTN	1000	1e-74	88
3052	16	700978001H1	SOYMON009	g170772	BLASTN	563	1e-73	89
3053	16	700561987H1	SOYMON002	g1220121	BLASTN	782	1e-73	87
3054	16	701101526H1	SOYMON028	g1220121	BLASTN	810	1e-73	88
3055	16	700562680H1	SOYMON002	g170772	BLASTN	985	1e-73	87
3056	16	700560521H1	SOYMON001	g170772	BLASTN	988	1e-73	80
3057	16	701055544H1	SOYMON032	g170772	BLASTN	992	1e-73	88
3058	16	701061418H1	SOYMON033	g170772	BLASTN	993	1e-73	87
3059	16	701049514H1	SOYMON032	g1220121	BLASTN	884	1e-72	88
3060	16	700646215H1	SOYMON012	g170772	BLASTN	971	1e-72	89
3061	16	701014875H1	SOYMON019	g535583	BLASTN	973	1e-72	87
3062	16	700874718H1	SOYMON018	g169662	BLASTN	974	1e-72	86
3063	16	700897796H1	SOYMON027	g1220121	BLASTN	977	1e-72	87
3064	16	700548019H1	SOYMON001	g170772	BLASTN	547	1e-71	87
3065	16	700904875H1	SOYMON022	g535583	BLASTN	963	1e-71	88
3066	16	701106315H1	SOYMON036	g170772	BLASTN	557	1e-70	90
3067	16	700745023H1	SOYMON013	g407411	BLASTN	949	1e-70	85
3068	16	701120348H1	SOYMON037	g170772	BLASTN	956	1e-70	86
3069	16	701124508H1	SOYMON037	g170772	BLASTN	578	1e-69	84
3070	16	700956183H1	SOYMON022	g1220121	BLASTN	625	1e-69	87
3071	16	700894619H1	SOYMON024	g535583	BLASTN	828	1e-69	85
3072	16	700892392H1	SOYMON024	g535583	BLASTN	936	1e-69	85
3073	16	700730676H1	SOYMON009	g535583	BLASTN	939	1e-69	86
3074	16	700728913H1	SOYMON009	g407411	BLASTN	940	1e-69	87
3075	16	700845737H1	SOYMON021	g1220121	BLASTN	528	1e-68	88
3076	16	700990961H1	SOYMON011	g170772	BLASTN	582	1e-68	85
3077	16	700983443H1	SOYMON009	g170772	BLASTN	922	1e-68	86
3078	16	701120754H1	SOYMON037	g170772	BLASTN	923	1e-68	88
3079	16	700900486H1	SOYMON027	g1220121	BLASTN	924	1e-68	83
3080	16	701133574H2	SOYMON038	g170772	BLASTN	929	1e-68	88
3081	16	700900924H1	SOYMON027	g170772	BLASTN	931	1e-68	88
3082	16	701056706H1	SOYMON032	g170772	BLASTN	486	1e-67	89
3083	16	701110051H1	SOYMON036	g170772	BLASTN	910	1e-67	88
3084	16	701136325H1	SOYMON038	g170772	BLASTN	915	1e-67	87
3085	16	700750809H1	SOYMON014	g170772	BLASTN	900	1e-66	88
3086	16	700686607H1	SOYMON008	g170772	BLASTN	901	1e-66	88
3087	16	700848261H1	SOYMON021	g535583	BLASTN	905	1e-66	87
3088	16	700686634H1	SOYMON008	g170772	BLASTN	905	1e-66	88
3089	16	700891285H1	SOYMON024	g170772	BLASTN	906	1e-66	88
3090	16	700560291H1	SOYMON001	g170772	BLASTN	906	1e-66	88
3091	16	700752975H1	SOYMON014	g170772	BLASTN	907	1e-66	89
3092	16	701006013H2	SOYMON019	g170772	BLASTN	908	1e-66	87
3093	16	700974038H1	SOYMON005	g1220121	BLASTN	631	1e-65	88
3094	16	701047024H1	SOYMON032	g170772	BLASTN	707	1e-65	89

3095	16	700900409H1	SOYMON027	g170772	BLASTN	737	1e-65	83
3096	16	701137320H1	SOYMON038	g170772	BLASTN	769	1e-65	88
3097	16	700978805H1	SOYMON009	g170772	BLASTN	886	1e-65	84
3098	16	700726195H1	SOYMON009	g1220121	BLASTN	889	1e-65	87
3099	16	700661112H1	SOYMON005	g170772	BLASTN	661	1e-64	85
3100	16	700989712H1	SOYMON011	g170772	BLASTN	788	1e-64	88
3101	16	700752287H1	SOYMON014	g170772	BLASTN	875	1e-64	85
3102	16	700964226H1	SOYMON022	g170772	BLASTN	877	1e-64	88
3103	16	700847346H1	SOYMON021	g170772	BLASTN	880	1e-64	83
3104	16	700756428H1	SOYMON014	g170772	BLASTN	883	1e-64	88
3105	16	701049928H1	SOYMON032	g170772	BLASTN	885	1e-64	82
3106	16	700848652H1	SOYMON021	g170772	BLASTN	477	1e-63	89
3107	16	700898929H1	SOYMON027	g1220121	BLASTN	514	1e-63	87
3108	16	700903523H1	SOYMON022	g170772	BLASTN	527	1e-63	82
3109	16	700983745H1	SOYMON009	g1220121	BLASTN	863	1e-63	88
3110	16	700890587H1	SOYMON024	g170772	BLASTN	865	1e-63	86
3111	16	700969917H1	SOYMON005	g407411	BLASTN	868	1e-63	83
3112	16	700808487H1	SOYMON024	g170772	BLASTN	870	1e-63	88
3113	16	700749968H1	SOYMON013	g170772	BLASTN	871	1e-63	87
3114	16	700751254H1	SOYMON014	g170772	BLASTN	575	1e-62	87
3115	16	701014277H1	SOYMON019	g170772	BLASTN	739	1e-62	86
3116	16	700853635H1	SOYMON023	g170772	BLASTN	854	1e-62	87
3117	16	700752357H1	SOYMON014	g170772	BLASTN	856	1e-62	88
3118	16	700754523H1	SOYMON014	g170772	BLASTN	856	1e-62	92
3119	16	700982153H1	SOYMON009	g170772	BLASTN	400	1e-61	82
3120	16	700958283H1	SOYMON022	g170772	BLASTN	839	1e-61	87
3121	16	700980911H1	SOYMON009	g170772	BLASTN	842	1e-61	82
3122	16	700788112H1	SOYMON011	g170772	BLASTN	844	1e-61	83
3123	16	701005927H1	SOYMON019	g170772	BLASTN	849	1e-61	88
3124	16	700756443H1	SOYMON014	g170772	BLASTN	849	1e-61	88
3125	16	700658914H1	SOYMON004	g1220121	BLASTN	468	1e-60	85
3126	16	701135266H1	SOYMON038	g170772	BLASTN	827	1e-60	87
3127	16	700982179H1	SOYMON009	g170772	BLASTN	827	1e-60	82
3128	16	700754593H1	SOYMON014	g170772	BLASTN	832	1e-60	81
3129	16	700831723H1	SOYMON019	g170772	BLASTN	814	1e-59	91
3130	16	700986775H1	SOYMON009	g170772	BLASTN	815	1e-59	92
3131	16	700755219H1	SOYMON014	g170772	BLASTN	820	1e-59	84
3132	16	701015494H1	SOYMON019	g170772	BLASTN	822	1e-59	88
3133	16	701008473H1	SOYMON019	g170772	BLASTN	823	1e-59	87
3134	16	700754981H1	SOYMON014	g170772	BLASTN	824	1e-59	88
3135	16	700870790H1	SOYMON018	g170772	BLASTN	825	1e-59	81
3136	16	700833069H1	SOYMON019	g170772	BLASTN	806	1e-58	86
3137	16	700680127H2	SOYMON008	g535583	BLASTN	807	1e-58	86
3138	16	701015374H1	SOYMON019	g170772	BLASTN	807	1e-58	87
3139	16	700872895H1	SOYMON018	g535583	BLASTN	808	1e-58	88
3140	16	701137912H1	SOYMON038	g170772	BLASTN	374	1e-57	83
3141	16	700984063H1	SOYMON009	g1220121	BLASTN	575	1e-57	79
3142	16	700991988H1	SOYMON011	g170772	BLASTN	791	1e-57	82
3143	16	700873915H1	SOYMON018	g170772	BLASTN	793	1e-57	88
3144	16	700978721H1	SOYMON009	g170772	BLASTN	797	1e-57	78
3145	16	701213679H1	SOYMON035	g170772	BLASTN	798	1e-57	88
3146	16	701102954H1	SOYMON028	g170772	BLASTN	799	1e-57	79
3147	16	700888289H1	SOYMON024	g170772	BLASTN	712	1e-56	91
3148	16	700962086H1	SOYMON022	g170772	BLASTN	783	1e-56	88

3149	16	701052227H1	SOYMON032	g535583	BLASTN	788	1e-56	86
3150	16	700755177H1	SOYMON014	g170772	BLASTN	768	1e-55	88
3151	16	701123136H1	SOYMON037	g170772	BLASTN	771	1e-55	82
3152	16	700979067H1	SOYMON009	g170772	BLASTN	776	1e-55	90
3153	16	700755513H1	SOYMON014	g170772	BLASTN	759	1e-54	92
3154	16	700756639H1	SOYMON014	g170772	BLASTN	761	1e-54	81
3155	16	700554077H1	SOYMON001	g170772	BLASTN	371	1e-53	86
3156	16	700653194H1	SOYMON003	g170772	BLASTN	395	1e-53	86
3157	16	701110348H1	SOYMON036	g170772	BLASTN	743	1e-53	81
3158	16	700753973H1	SOYMON014	g170772	BLASTN	743	1e-53	87
3159	16	701011009H1	SOYMON019	g535583	BLASTN	733	1e-52	81
3160	16	700739086H1	SOYMON012	g170772	BLASTN	456	1e-51	87
3161	16	700740140H1	SOYMON012	g170772	BLASTN	723	1e-51	89
3162	16	700565040H1	SOYMON002	g170772	BLASTN	729	1e-51	74
3163	16	701148186H1	SOYMON031	g535583	BLASTN	665	1e-50	85
3164	16	701142734H1	SOYMON038	g535583	BLASTN	670	1e-47	86
3165	16	700754441H1	SOYMON014	g170772	BLASTN	385	1e-46	93
3166	16	701102588H1	SOYMON028	g1220121	BLASTN	662	1e-46	89
3167	16	700900656H1	SOYMON027	g535583	BLASTN	635	1e-44	87
3168	16	700974207H1	SOYMON005	g535583	BLASTN	641	1e-44	85
3169	16	700982081H1	SOYMON009	g170772	BLASTN	494	1e-43	78
3170	16	701130026H1	SOYMON037	g1220121	BLASTN	482	1e-42	86
3171	16	701009720H1	SOYMON019	g170772	BLASTN	621	1e-42	87
3172	16	700962602H1	SOYMON022	g170772	BLASTN	357	1e-40	91
3173	16	700724934H1	SOYMON009	g535583	BLASTN	561	1e-40	81
3174	16	700729305H1	SOYMON009	g535583	BLASTN	544	1e-39	82
3175	16	701210054H1	SOYMON035	g535583	BLASTN	569	1e-38	85
3176	16	700790192H1	SOYMON011	g535583	BLASTN	293	1e-37	83
3177	16	700984076H1	SOYMON009	g170772	BLASTN	198	1e-35	88
3178	16	700726562H1	SOYMON009	g170772	BLASTN	307	1e-34	78
3179	16	701211376H1	SOYMON035	g170772	BLASTN	524	1e-34	86
3180	16	700753085H1	SOYMON014	g2588780	BLASTN	358	1e-33	76
3181	16	700727993H1	SOYMON009	g535583	BLASTN	465	1e-32	84
3182	16	700561072H1	SOYMON001	g170772	BLASTN	473	1e-30	83
3183	16	701211464H1	SOYMON035	g170772	BLASTN	464	1e-28	81
3184	16	701098045H1	SOYMON028	g169660	BLASTN	386	1e-21	78
3185	16	700945233H1	SOYMON024	g407412	BLASTX	150	1e-18	87
3186	16	700752655H1	SOYMON014	g758247	BLASTX	172	1e-16	94
3187	16	700735356H1	SOYMON010	g758247	BLASTX	152	1e-14	100
3188	16	700683995H1	SOYMON008	g758247	BLASTX	106	1e-13	90
3189	16	700658760H1	SOYMON004	g1857024	BLASTX	123	1e-13	63
3190	16	700762885H1	SOYMON015	g1857024	BLASTX	134	1e-13	89
3191	16	700755740H1	SOYMON014	g170773	BLASTX	149	1e-13	100
3192	16	700854969H1	SOYMON023	g170772	BLASTN	178	1e-12	80
3193	16	701143036H1	SOYMON038	g169661	BLASTX	113	1e-8	83
3194	18409	700786561H1	SOYMON011	g535583	BLASTN	992	1e-73	85
3195	18409	701008057H1	SOYMON019	g535583	BLASTN	831	1e-60	87
3196	18409	701037442H1	SOYMON029	g535583	BLASTN	669	1e-46	86
3197	18409	700942865H1	SOYMON024	g535583	BLASTN	464	1e-32	86
3198	7322	700651524H1	SOYMON003	g170772	BLASTN	466	1e-65	80
3199	7322	700565758H1	SOYMON002	g170772	BLASTN	450	1e-63	81

CYSTATHIONINE β-SYNTHASE (EC 4.2.1.22)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
1631	-700025795	700025795H1	SATMON003	g1323263	BLASTX	186	1e-25	68
1632	20651	700344783H1	SATMON021	g1813975	BLASTX	41	1e-9	53

CYSTATHIONINE γ-LYASE (EC 4.4.1.1)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
1633	-700260027	700260027H1	SATMON017	g169475	BLASTX	112	1e-10	75
1634	1228	700027629H1	SATMON003	g169475	BLASTX	189	1e-19	87
3203	-700750583	700750583H1	SOYMON014	g169475	BLASTX	149	1e-13	78
3204	12502	LIB3051-069-Q1-K1-E6	LIB3051	g2641242	BLASTX	86	1e-30	38

O-ACETYLHOMOSERINE (THIOL)-LYASE (EC 4.2.99.10)

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
3200	12502	701135185H1	SOYMON038	g1628606	BLASTX	100	1e-10	48
3201	12502	701042913H1	SOYMON029	g2605905	BLASTX	110	1e-9	42
3202	12502	701059330H1	SOYMON033	g2605905	BLASTX	110	1e-9	42

*Table Headings

Cluster ID

A cluster ID is arbitrarily assigned to all of those clones which belong to the same cluster at a given stringency and a particular clone will belong to only one cluster at a given stringency. If a cluster contains only a single clone (a "singleton"), then the cluster ID number will be negative, with an absolute value equal to the clone ID number of its single member. The cluster ID entries in the table refer to the cluster with which the particular clone in each row is associated.

Clone ID

The clone ID number refers to the particular clone in the PhytoSeq database. Each clone ID entry in the table refers to the clone whose sequence is used for (1) the sequence comparison whose scores are presented and/or (2) assignment to the particular cluster which is presented. Note that a clone may be included in this table even if its sequence comparison scores fail to meet the minimum standards for similarity. In such a case, the clone is included due solely to its association with a particular cluster for which sequences of one or more other member clones possess the required level of similarity.

Library

The library ID refers to the particular cDNA library from which a given clone is obtained. Each cDNA library is associated with the particular tissue(s), line(s) and developmental stage(s) from which it is isolated.

NCBI gi

Each sequence in the GenBank public database is arbitrarily assigned a unique NCBI gi (National Center for Biotechnology Information GenBank Identifier) number. In this table, the

NCBI gi number which is associated (in the same row) with a given clone refers to the particular GenBank sequence which is used in the sequence comparison. This entry is omitted when a clone is included solely due to its association with a particular cluster.

Method

The entry in the "Method" column of the table refers to the type of BLAST search that is used for the sequence comparison. "CLUSTER" is entered when the sequence comparison scores for a given clone fail to meet the minimum values required for significant similarity. In such cases, the clone is listed in the table solely as a result of its association with a given cluster for which sequences of one or more other member clones possess the required level of similarity.

Score

Each entry in the "Score" column of the table refers to the BLAST score that is generated by sequence comparison of the designated clone with the designated GenBank sequence using the designated BLAST method. This entry is omitted when a clone is included solely due to its association with a particular cluster. If the program used to determine the hit is HMMSW then the score refers to HMMSW score.

P-Value

The entries in the P-Value column refer to the probability that such matches occur by chance.

%Ident

The entries in the "%Ident" column of the table refer to the percentage of identically matched nucleotides (or residues) that exist along the length of that portion of the sequences which is aligned by the BLAST comparison to generate the statistical scores presented. This entry is omitted when a clone is included solely due to its association with a particular cluster.

We claim:

1. A substantially purified nucleic acid molecule that encodes a maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of:

(a) methionine adenosyltransferase,

(b) S-adenosyl-methionine decarboxylase,

(c) aspartate kinase,

(d) aspartate-semialdehyde dehydrogenase,

(e) cystathionine gamma-synthase,

(f) cystathionine beta-lysase, and

(g) 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase.

2. The substantially purified nucleic acid molecule according to claim 1, wherein said nucleic acid molecule comprises a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204.

3. A substantially purified maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of

(a) methionine adenosyltransferase or fragment thereof;

(b) S-adenosyl-methionine decarboxylase or fragment thereof;

(c) aspartate kinase or fragment thereof;

(d) aspartate-semialdehyde dehydrogenase or fragment thereof;

(e) cystathionine gamma-synthase or fragment thereof;

(f) cystathionine beta-lysase or fragment thereof; and

(g) 5-methyltetrahydropteroyltriglutamate-homocysteine-S-methyltransferase or fragment thereof.

4. A substantially purified maize or soybean enzyme or fragment thereof according to claim 3, wherein said maize or soybean enzyme or fragment thereof is encoded by a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of consisting of SEQ ID NO: 1 through SEQ ID NO: 3204.

5. A substantially purified antibody or fragment thereof which is capable of specifically binding to a specific maize or soybean enzyme or fragment thereof according to claim 4.

6. A transformed plant having a nucleic acid molecule which comprises:

(A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule;

(B) a structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of

(a) a nucleic acid sequence which encodes for methionine adenosyltransferase or fragment thereof;

(b) a nucleic acid sequence which encodes for S-adenosyl-methionine decarboxylase or fragment thereof;

(c) a nucleic acid sequence which encodes for aspartate kinase or fragment thereof;

(d) a nucleic acid sequence which encodes for aspartate-semialdehyde dehydrogenase or fragment thereof;

(e) a nucleic acid sequence which encodes for cystathionine gamma-synthase or a fragment thereof;

(f) a nucleic acid sequence which encodes for cystathionine beta-lysase or a fragment thereof;

(g) a nucleic acid sequence which encodes for 5-methyltetrahydropteroyl-triglutamate-homocysteine-S-methyltransferase or a fragment thereof; and

(h) a nucleic acid sequence which is complementary to any of the nucleic acid sequences of (a) through (g); and

(C) a 3' non-translated sequence that functions in said plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of said mRNA molecule.

7. The transformed plant according to claim 5, wherein said structural gene is complementary to any of the nucleic acid sequences of (a) through (g).

8. A method for determining a level or pattern in a plant cell of an enzyme in a plant metabolic pathway comprising:

(A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, said marker nucleic acid molecule selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having the nucleic acid sequence of SEQ ID NO: 1 through SEQ ID NO: 3204 or compliments thereof, with a complementary nucleic acid molecule obtained from said plant cell or plant tissue, wherein nucleic acid hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant cell or plant tissue permits the detection of an mRNA for said enzyme;

(B) permitting hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant cell or plant tissue; and

(C) detecting the level or pattern of said complementary nucleic acid, wherein the detection of said complementary nucleic acid is predictive of the level or pattern of said enzyme in said plant metabolic pathway.

9. The method of claim 8, wherein said level or pattern is detected by *in situ* hybridization.

10. A method of determining a mutation in a plant whose presence is predictive of a mutation affecting a level or pattern of a protein comprising the steps:

(A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid, said marker nucleic acid selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having a nucleic acid sequence selected from the group of SEQ ID NO: 1 through SEQ ID NO: 3204 or complements thereof and a complementary nucleic acid molecule obtained from said plant, wherein nucleic acid hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting said level or pattern of said plant methionine pathway enzyme in said plant;

(B) permitting hybridization between said marker nucleic acid molecule and said complementary nucleic acid molecule obtained from said plant; and

(C) detecting the presence of said polymorphism, wherein the detection of said polymorphism is predictive of said mutation.

11. A method of producing a plant containing an overexpressed protein comprising:

(A) transforming said plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein said promoter region is linked to a structural region, wherein said structural region has a nucleic acid sequence selected from group consisting of SEQ ID NO: 1 through SEQ ID NO: 3204 wherein said structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of

transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein said functional nucleic acid molecule results in overexpression of the protein; and

(B) growing said transformed plant.

ABSTRACT

The present invention is in the field of plant biochemistry. More specifically the invention relates to nucleic acid sequences from plant cells, in particular, DNA sequences from maize and soybean plants associated with the methionine pathway. The invention encompasses nucleic acid molecules that encode proteins and fragments of proteins. In addition, the invention also encompasses proteins and fragments of proteins so encoded and antibodies capable of binding these proteins or fragments. The invention also relates to methods of using the nucleic acid molecules, proteins and fragments of proteins and antibodies, for example for genome mapping, gene identification and analysis, plant breeding, preparation of constructs for use in plant gene expression and transgenic plants.

<110> Bledig, Stefan A.
Byrum, Joseph R.
Liu, Jingdong
Hinkle, Gregory J.

<120> Nucleic Acid molecules And Other Molecules Associated With The Methionine Synthesis And Degradation Pathways

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ctacgtcgcc aggcaggccg ccaagagcat cgtggccagc ggcctcgccc gccgctgcct 120

cgtgcaggtg tcctacgcca tcggcgtgcc ggagcccctg tccgtgttcg tcgactccta 180

cggcaccggg accatccccg acaaggagat cctaaagatc gtcaaggaga acttcgactt 240

caggccaggg atggtcacca tcaacctcga cctcaagaag ggcggcaaca ggttcatcaa 300

gaccgccgca tacggncact ttggccgtga cgacgccgac ttcacctggg aggtggtcaa 360

gcccctaaag aangcattcc gcttaagaat gtattgggaa gttcactgga catgaagttc 420

atcttcgtct ggctt 435

<210> 29
<211> 484
<212> nucleic acid
<213> Zea mays

<400> 29

ttcgnatggt tcanactgcc annacagntc aaggnctcgc gggtcgannc angcctcnag 60

gcanntncgc ntgactgagg cccgacggca agacccaggt gacggtggag tacgtgaacg 120

agggcggcgc catggtgccc gtccgcgtgc acaccgtgct catctccacc cagcacgacg 180

agaccgtcac caacgacgag atcgccgccg acctcaagga gcacgtcatc aagcccgtga 240

tccctgagaa gtacctcgac gagaagacca tcttccacct caacccgtcc gggcgcttcg 300

tcatcggcgg gccccacggt gacgccggcc tcaccggccg caagatnatc atcgacacgt 360

acggcggctg ggagcccac ggcggtggcg ccttctccgg caaggacccc accaaaggtg 420

gaccgcaacg gcgcctaagn nggccaaggc agggccgcca annagnnttc ntgncaagcg 480

ggng 484

<210> 30
<211> 416
<212> nucleic acid
<213> Zea mays

<400> 30

ctcacagagg ttcgcaagaa tggaacctgg ccctggctca ggcccgatgg gaagacccag 60

gtgacagtgg agtaccgcaa cgagggtggc gccatggttc ccatccgtgt gcacacagtc 120

ctcatctcta cccagcacga cgagacagtc accaacgacg agattgctgc tgacctgaag 180

gagcacgtca tcaagccagt catccccgag cagtacctcg acgagaagac aatcttccac 240

ctcaacccgt ctggccgntt cgtcatcggc ggacctnacg gcgacgccgg cctactggcc 300

gnaagatcat catcgacacc tacggtggct ggggagccca cggcgggggc gccttcttcg 360

gcaaggaccc gaccaangtg gaccgcacgg ggcctacgtn cgaggnaagc ttgcna 416

<210> 31
<211> 484
<212> nucleic acid
<213> Zea mays

<400> 31

attggtggac ctcacggcga tgctggcctc actggccgca agatcatcat tgacacctac 60

gggggctggg gagcccatgg tggtggcgct ttctccggca aggacccaac caaggttgac 120

cgcagcggag cctatgtcgc aaggcaggct gccaagagca tcgtcgccag cggccttgct 180

cgccgcgcca tcgtccaggt gtcttacgcc atcggcgtgc ccgagcctct ctccgtgttc 240

gtcgacacgt acggcaccgg cgcgatcccc gacaaggaga tcctcaagat tgtcaaggag 300

aacttcgatt tcaggcctgg catgatcatc atcaaccttg acctcaagaa aggcggcaac 360

gggccgctac ctnaagacgg cggnctacgg gcacttttgg aaagggacca acctgacttn 420

acctgggaag gggtgaaccc cttaagtcgg agaaaccctt ttgctaaggg ggcctttttt 480

ttaa 484

<210> 32
<211> 477
<212> nucleic acid
<213> Zea mays

<400> 32

aactttattg ccaggcacgg taaangaatc ccgggtcgac ccacgcgtcn gaggaccccc 60

caaggtggac cgcagcggcg cctacgtggc caggcaggcc gccaagagca tcgtggccgc 120

ggcctcgccc gccgctgcct cgtgcaggtg tcgtacgcca tcggtgtgcc ggagccctgt 180

ccgtgttcgt cgactcgtac ggcaccggca cgatccccga caaggagatc ctcaagtcgt 240

gaaggagaac ttcgacttca ggcccgggat gatcagcatc aacctcgacc tgaagagggc 300

ggcaacaggt tcatcaagac cgccgcttac ggccatttcg gccgtgacga cgccacttca 360

cctgggaagt ggtgaagccc ctcaagttcg acaaggcatc cggcttaang ttggaatnnt 420

caacggtggg gcatgaggac taccttcctc cnggctctgc tgttacctgc aacattg 477

<210> 33
<211> 488
<212> nucleic acid
<213> Zea mays

<400> 33

ggnnnnnnnn naactgttac gcntgccggt gccggtccag aattcacggg tcgacccacg 60

cgtccgcgtt tgcctcttct ccctcttgcc gggtcccgaa taaagagcag cagcgcaaga 120

gtcggtagag cgagaagaag gcaatggcgg ccgagagctt ccttttcacc tcggagtccg 180

tgaacgaggg gcaccccgac aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat 240

gcctcgcgca ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag accaacatgg 300

tgatggtgtt cggcgagatc acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg 360

acacctgccg cgagatcggg ttcacctccg acgacgtggg cctcgacgcc gaccgctgca 420

aggtgctggt gaacatcgag caacagtccc cgacatcgcg caaggcgtgc acgggcactt 480

cacgaaac 488

<210> 34
<211> 480
<212> nucleic acid
<213> Zea mays

<400> 34

ggggnnngnn ggtctctttt ggccnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnncc 60

acgcntccgc gtttgcctct tctccctctt gccggtcccg aataaagagc agcagcgcaa 120

gaggtcggta gagcgagaag aaggcaatgg cggccgagag cttccttttc acctcggagt 180

ccgtgaacga ggggcacccc gacaagctgt gcgaccaggt gtcggacgcc gtgcttgacg 240

catgcctcgc gcaggacccc gacagcaagg tggcctgcga gacctgcacc aagaccaaca 300

tggtgatggt gttcggcgag atcacgacca aggcgaccgt ggactacgag aagatcgtgc 360

gcgacacctg ccgcgagatc gggttcacct ccgacgacgt gggcctcgac gccgaccgct 420

gcaaggtgct ggtgaacatc gagcagcagt cccccgacat cgcgcanggc gtgcacgggc 480

<210> 35
<211> 453
<212> nucleic acid
<213> Zea mays

<400> 35

ccgttcgcct cttctcctcc ctcctgccgg gtccttaata aagagcagca ncgcaagagg 60

tnggtagagc gagcgagaag aaggcaatgg cggcggagag cttcctgttc acctcggagt 120

ccgtgaacga ggggcaccca gacaagctgt gcgaccaggt gtcggacgcg gtgctggacg 180

cctgcctggc gcangacccc gacagcaagg tggcctgcna gacctgcacc aagacgaaca 240

tggtgatggt gttcggcgag atcaccacca aggcgagcgt ggactacgag aagatcgtgc 300

gcgacacctg ccgcgagatc gggttcacct tcgacgacgt ggggctcgac nccnaccgct 360

gcaaggtgct ggtgaacatc gagcagcagt cccccgacat cgcgcaaggc gtgcacggca 420

ctttacgaaa ccggcccgag gagatcggcc cnt 453

<210> 36
<211> 505
<212> nucleic acid

<213> Zea mays

<400> 36

agggttgttg anngttggnt anatganann tgcttttacn cggtttcgga attcccgggt 60

cgacccacgc gtccgcccgt tcgcctcttc tnctncctcc tgtcgggtcc ttaataaaga 120

gcagcagcgc aagaggttgg tagagcgagc gagaagaagg caatggcggc ggagagcttc 180

ctgttcacct cggagtccgt gaacgagggg cacccagaca agctgtgcga ccaggtgtcg 240

gacgcggtgc tggacgcctg cctggcgcan gaccccgaca gcaaggtggc ctgcgagacc 300

tgcaccaaga cgaacatggt gatggtgttc ggcgagatca ccaccaaggc gagcgtggac 360

tacgagaaga tcgtgcgcga cacctgccgc gagatcgggt tcacctncga cgacgtgggg 420

ctcgacgccg accgctgcaa ggtgctggtg aacatcgagc ancagtcccc cgacatcgcg 480

cagggcgtgc acgggcactt tacga 505

<210> 37
<211> 447
<212> nucleic acid
<213> Zea mays

<400> 37

gcagtcccct gatattgctc agggtgtgca cggccacttc accaagcgnc ccgaggagat 60

tggagctggt gaccaggggc acatgtttgg gtatgcgact gacgagaccc ctgagctgat 120

gcccctcagc catgtccttg ccaccaagct tggtgctcgt ctcacagagg ttcgcaagaa 180

tggaacctgc ccctggctca ggcccgatgg gaagacccag gtgacagtgg agtaccgcaa 240

cgagggtggc gccatggttc ccatccgtgt gcacacagtc ctcatctcta cccaacacga 300

cgagacangt caccaacgac gaagattgct gctgacctga aaggaacaac gtcatcaaac 360

caagtcatnc ccgaacagta cctttgacga gaagacaatc tttcanctta acccgtctgg 420

nccntttgtc atnngnggac ctnaacg 447

<210> 38
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 38

ggncgctttg tcattggtgg acctcacggc gatgctggcc tcactggccg caagatcntc 60

atngacacct acggtggctg gggagcccat ggtggtggcg ctttctccgg caaggaccca 120

accaaggttg accgcagcgg agcctatgtc gcaaggcagg ctgccaagag catcgtcgcc 180

agcggccttg ctcgccgcgc catcgtccag gtgtcttacg ccatcggcgt gcccgagcct 240

ctctccgtgt tcgtcgacac gtacggcacc ggcgcgatcc ccgacaagga gatcctcaag 300

attgtcaaag gagaacttcg atttcaggcc tggcatgatc atcatcaacc ttgacctcaa 360

gaaaggcggc aacgggcgct tancttaaga acggcggnct acgggcactt ttggaangga 420

<210> 39
<211> 499
<212> nucleic acid
<213> Zea mays

<400> 39

cccatctggc cgctttgtca ttggtggacc tcacggcgat gctggcctca ctggccgcaa 60

gatcatcatt gacacctacg gtggctgggg agcccatggt ggtggcgctt tctccggcaa 120

ggacccaacc aaggttgacc gcagcggagc ctatgtcgca aggcaggctg ccaagagcat 180

cgtcgccagc ggccttgctc gccgcgccat cgtccaggtg tcttacgcca tcggcgtgcc 240

cgagcctctc tccgtgttcg tcgacacgta cggcaccggc gcgatccccg acaaggagat 300

cctcaagatt gtcaaggaga acttcgattt caggcctggc atcatcatca accttgacct 360

caagaaaggc ggcaacgggc gctacctnaa gacggcggcc tacggcactt tggaagggac 420

gaccctgact tcacctggga ggtggtgaaa ccactcaaag tcggagaaac cttntgctaa 480

agcnggcttt tttttaaaa 499

<210> 40
<211> 494
<212> nucleic acid
<213> Zea mays

<400> 40

ggnnnnngnn nnngttaact tntccgccgg caggtaangg tcaagaattc ccgggtcgac 60

cacgcgtccg ctcnctcttg ccggtcccga ataaanagca gcagcgcang aggtcggtga 120

gcgagaagaa ggcaatggcg gccgagagct tccttttcac ctcggantcc gtgaacgggg 180

gcacccccgac aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcggcag 240

gaccccgaca gcaangtggc ctgcgagacc tgcaccaaga ccaacatggt gatgggttcg 300

gcgagatcac gaccaaggcg accgtggact acgagaagat cgtgcgcgac acctccgcga 360

gatngggttc acctccgacg aactgggcct cnaacgccga accgctgcaa ggtctggtga 420

acatcnanca gcatttcccc gacatcgcgc agggcntgca cgggcacttc acaagcngcc 480

cgaggagatc ngcg 494

<210> 41
<211> 499
<212> nucleic acid
<213> Zea mays

<400> 41

gggnttnntn tgntgnngat ntntggcnnn ccggtccgga attcccgggt cgacccacgc 60

gtccgnccac gcgtccgcat catcgacacg tacggnggct ggggagccca cggcggtggc 120

gcctnctccg gcaaggaccc caccaaggtg gaccgcagcg gcgcctacgt ggccaggcag 180

gccgccaaga gcatcgtggc cagcggcctc gcccgccgct gcctcgtgca ggtgtcgtac 240

gccatcggcg tgccggagcc cctgtccgtg ttcgtcgact cgtacggcac cggcacgatc 300

cccgacaagg agatcctcaa gatcgtgaag gagaacttca acttcaggcc cgggatgatc 360

agcatcaacc tcgacctgaa gaanggcggc aacaggttca tcangaccga cgctacggcc 420

acttcggccg tgacgacgcc gactttacct gggaagtggt gaagcccctt aagttccaca 480

aggattnggt ttaaggttg 499

<210> 42
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 42

cccgacggca agacccaggt gacggtggag tacgtgaacg anggcggcgc catggtgccc 60

gtccgcgtgc acaccgtgct catctccacc cagcacgacg agaccgtcac cnaacgacga 120

gatcgccgcc gacctcaagg agcacgtcat caagcccgtc atcccggaga ggtacctgga 180

cgagaagacc atcttccacc tcaacccgtc ggggcgcttc gtcatcggcg ggccccacgg 240

ggacgccggc ctcaccggcc gcaagatcat catcgacacc tacggcggct ggggagccca 300

cggcgggggc gccttctccg gcaag 325

<210> 43
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 43

agcggcccga ggagatcggc gcgggcgacc agggccacat gttcgggtac gccaccgacg 60

agaccccga gctgatgccg ctgagccacg tgctggccac caagctgggc gcgcgcctca 120

ccgaggtgcg caagaacggc acctgcgcct ggctgaggcc cgacggcaag acccaggtga 180

cggtggagta cgtgaacgag ggcggcgcca tggtgcccgt ccgcgtgcac accgtgctca 240

tctccaccca gcacgacgag accgtcacca acgacgagat cgccgccgac ctcaaggagc 300

acgtcatcaa gcccgtgat 319

<210> 44
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 44

ggaacctgcc cctggctnag gcccgatggg aagacccagg tgacagtgga gtaccgcaac 60

gagggtggcg ccatggttcc catccgtgtg cacacagtcc tcatctctac ccagcacgac 120

gagacagtca ccaacgacga gattgctgct gacctgaagg agcacgtcat caagccagtc 180

atccccgagc agtacctnna cnagaagaca atcttcacct caacccgtnt ggccgcttcg 240

tcatcggcgg accttacggc gacnccggcc tnactggccg gaaagatcat natcgacacc 300

tacggtggct ngggagccca cggcgggggc gccttnttcg gcaaggaccc gaccaaagtt 360

gaccgcaacg ggcctacgt ngcgaggcaa gcttgcaana ncatngtnnn ccgccgnctt 420

nccgcggnc 429

<210> 45
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 45

cgggcgacca gggccacatg ttcgggtacg ccaccgacga gaccccgag ctgatgccgc 60

tgagccacgt gctggccacc aagctgggcg cgcgcctcac cgaggtgcgc aagaacggca 120

cctgcgcctg gctgaggccc gacggcaaga cccaggtgac ggtggagtac gtgaacgagg 180

gcggcgccat ggtgcccgtc cgcgtgcaca ccgtgctcat ctccacccag cacgacgaga 240

ccgtcaccaa cgacgagatc gccgccgacc tcaaggagca cgtcatcaag cccgtgatcc 300

ctgagaagta cctcg 315

<210> 46
<211> 474
<212> nucleic acid
<213> Zea mays

<400> 46

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anaannccct agagtnagtc gtttaacggc gggggcgcct tctccggcaa ggacccgacc 120

aaggtggacc gcagcggggc ctacgtcgcg aggcaggctg ccaagagcat cgtcgccgcc 180

ggcctcgccc gccgtgccat cgtccaggtc tcctacgcca tcggcgtgcc cgagcccctg 240

tcggtgttcg tggacacgta cggcaccggc gcgatccccg acaaggagat cctgaagatc 300

gtgaaggaga acttcgactt caggcccggc atgatcatca tcaacctcga cctcaagaaa 360

ggcggcaacg ggcgctacct caagacggcg gcctacgggc actttgggag ggacgaaccc 420

gacttcacct gggaagtngt taaacccccc naaggcggaa aanccttntt ctgg 474

<210> 47
<211> 410
<212> nucleic acid
<213> Zea mays

<400> 47

gtgcgcgaca cctgccgcga gatcgggttc acctccgacg acgtgggcct cgacgccgac 60

cgctgcaagg tgctggtgaa catcgagcag cagtcccccg acatcgcgca nggcgtgcac 120

gggcacttca cgaagcggcc cgaggagatc ggcgcgggcg accagggcca catgttcggg 180

tacnccaccg acnagacccc cgagctgatg ccgctcagcc acgtgctggc caccaagctn 240

ggcncgcgcc tcaccgaggt tccgcaagac gggnacctgc gcctggntga nggcccgacg 300

gcaagaccaa ggtnacggtg gagtacgtga actagggcgg ctccattggt gccctccgcg 360

ttcaaaaccg tgctaatntc accaagnact actaagaccg tnnccaacaa 410

<210> 48
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 48

ttgcccgtcc gcgtgcacac cgtgctcatc tccacccagc acgacgagac cgtcaccaac 60

gacgagatcg ccgccgacct caaggagcac gtaatcaagc ccgtcatccc gganaggtac 120

ctggacgaga agaccatctt ccacctcaac ccgtcggggc gcttcgtcat cggcgggccc 180

cacggggacg ccggcctcac cggccgcaag atcatcatcg acacctacgg cggctgggga 240

gcccacggcg ggggcgcctt ctccggcaag gaccccacca aggtggaccg cagcggg 297

<210> 49
<211> 438
<212> nucleic acid
<213> Zea mays

<400> 49

ctggcctcac tggccgnaag atcatcatcg acacctacgg tggctgggga gcccacggcg 60

ggggcncctt ctccggcaag gacccgacca aggtggaccg cagcggggcc tacgtcgcga 120

ggcaggctgc caagagcatc gtcgccgccg gcctcgcccg ccgtgccatc gtccaggtct 180

cctacgccat cggcgtgccc gagcccctgt cggtgttcgt ggacacntac ggcaccggcg 240

cgatccccga caaggagatc ctgaagatcg tgaaggagaa cttcgacttc angcccggca 300

tgatcatcat caacctngac ctcaagaaag gcggnnacgg nccgctacct taaanaacgg 360

nnggcctacg ggcactttgg gaagggacna accccnattt aacctgggaa gtggttnaac 420

cccttaaggc ggaaaaaa 438

<210> 50
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 50

cgtgaacgag gggcacccag acaagctgtg cgaccaggtg tcggacgcgg tgctggacgc 60

ctgcctggcg caggaccccg acagcaaggt ggcntgcgag acntgcacca agacgaacat 120

ggtgatggtg ttcggcgaga tcaccaccaa ggcgagcgtg gactacgaga agatcgtgcg 180

cgacacctgc cgcgagatcg ggttcacctc cgacgacgtg gggctcgacg ccgaccgctg 240

caaggtgctg gtgaacatcg ancagcagtc ccccgacntc gcgcagggcg tgcacgggca 300

nttcacgaag cggccc 316

<210> 51
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 51

acacagtcct catctctacc cagcacgacg agacagtcac caacgacgag attgctgctg 60

acctgaagga gcacgtcatc aagccagtca tccccgagca gtacctcgac gagaagacaa 120

tcttccacct caacccgtct ggccgcttcg tcatcggcgg acctcacggc gacgcggctc 180

tcactggccg gaagatcatc atcgacacct acggtggctg ggagcccac ggcggggcgc 240

cttctccggc aangacccga ccaaggtgga ccgcagcggg gcctacgtcg cgaggcaggc 300

tgccaagagc atcgtcgccg cggcctcgcc gcngcgctt 339

<210> 52
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 52

agaagatcgt gcgcgacacc tgccgcgaga tcgggttcac ctccgacgac gtgggcctcg 60

acgccgaccg ctgcaaggtg ctggtgaaca tcgagcagca gtcccccgac atcgcgcagg 120

gcgtgcacgg gcacttcacg aagcggcccg aggagatcgg cgcgggcgac cagggccaca 180

tgttcgggta cgccaccgac gagacccccg agctgatgcc gctgagccac gtgctggcca 240

ccaagctggg cgcgcgcctc accgaggtgc gcaagaacgg cacctgcgcc tggctgaggc 300

<210> 53

<211> 303
<212> nucleic acid
<213> Zea mays

<400> 53

gcccgaggag atcggcgcgg gcgaccaggg gccacatgtt cgggtacgcc accgacgaga 60

cccccgagct gatgccgtga gccacgtgct ggccaccaag ctgggcgcgc gcctcaccga 120

ggtgcgcaag aacggcacct gcgcctggct gaggcccgac ggcaagaccc aggtgacggt 180

ggagtacgtg aacgagggcg gcgccatggt gcccgtccgc gtgcacaccg tgctcatctc 240

cacccagcac gacgagaccg tcaccaacga cgagatcgcc gccgacctca aggagcacgt 300

cat 303

<210> 54
<211> 477
<212> nucleic acid
<213> Zea mays

<400> 54

tatttncccg ccaggtacaa gtcaagaatt cccgggtcga cccacgcgtc cgcccacgct 60

ccgcccacgc gtccgcccac gcgtccggcg gggcctacgt cgcgaggcag gctgccaaag 120

catcgtcgcc gccggcctcg cccgccgcgc cattgtccag gtctcctacg ccatcgggtg 180

cccgagcccc tttcggtgtt cgtggacacg tacggcaccg gcgcgatccc cgacaagaga 240

tcctgaagat cgtgaaggag aacttcgact tcaggcccgg catgatcatc atcaactcga 300

cctcaagaaa ggcggcaacg ggcgctacct caagacggcg gcctacgggc acttgggagg 360

gacgaccccg acttcacctg ggaggtggtg aagcccctca aggcggaaaa acctcttctg 420

caagaagggc ctcccccggt tttggaanaa gcttttggtc tggtctggtc tgtctgg 477

<210> 55
<211> 487
<212> nucleic acid
<213> Zea mays

<400> 55

ggnnnnngna antttaaccn ctagtaggac tgannggtca ggnattcacg ggtcgancca 60

cgcgtccatg cggctcttct ccctcttgcc ggtcccgaat aaagagcagc agcgcaagag 120

gtcggtagag cgagaagaag gcaatggcgg ccgagagctt ccttttcacc tcggagtccg 180

tgaacnaggg gcaccccgac aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat 240

gcctcgcgca ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag accaacatgg 300

tgatggtgtt cggcgaagat cacgaccaag gcgaccgtgg actacgaaga agatcgtgcg 360

cgacacctgc cgcgagatcg ggttcacctc cgacgacgtg ggcctcgacg ccgaccgctg 420

caangtgctg ggtgaacatc gagcagcagt cccccgacat cgcgcaaggc gtgcacgggc 480

acttcac 487

<210> 56
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 56

acctgcacca agaccaacat ggtcatggtc tttggtgaga tcaccaccaa ggccaatgtt 60

gactacgaga agattgtcag ggagacctgc cgcaacattg gttttgtgtc aaacgatgtt 120

gggcttgacg ccgancactg caaggtgctc gtgaacattg agcagcagtc ccctgatatt 180

gctcagggtg tgcatggcca cttcaccaag cgccccgagg agattggagc tggtgaccag 240

ggacacatgt tcgggtatgc naccgatgag accccctgagt tgatgcccct cagccatgt 299

<210> 57
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 57

acgatgtcgg gcttgacgct gaccactgca aggtgcttgt gaacattgag cagcagtccc 60

ctgatattgc tcagggtgtg cacggccact tcaccaagcg ccccgaggag attggagctg 120

gtgaccaggg gcacatgttt gggtatgcga ctgacgagac ccctgagctg atgcccctca 180

gccatgtcct tgccaccaag cttggtgctc gtctcacggn ggttcgcaag aatggaacct 240

gcccctggct caggcccgat gggaagaccc aggtgacagt ggagtaccgc aacgaaggtg 300

gcgcatgggt tccca 315

<210> 58

<211> 328
<212> nucleic acid
<213> Zea mays

<400> 58

cgtctggccg cttcgtcatc ggcggacctc acggcgacgc tggcctcact ggccggaaga 60

tcatcatcga cacctacggt ggctggggag cccacggcgg gggcgccttc tccggcaagg 120

acccgaccaa ggtggaccgc agcggggcct acgtcgcgag gcaggctgcc aagagcatcg 180

tcgccgccgg cctcgcccgc cgtgccatcg tccaggtctc ctacgccatc ggcgtgcccg 240

anccccctgtc ggtgttcgtg gacacgtacg gcaccggcgc gatccccgac aaggagatcc 300

tgaagatcgt gaaggagaat tcgacttc 328

<210> 59
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 59

cgagctgatg ccgctgagcc acgtgctggc caccaagctc ggcgcgcgnc tgacggaggt 60

ccgcaaggac ggcacctgcn cctggctcag gcccgacggc aagacccagg tgacggtgga 120

gtacgtgaac ganggcggcg ccatggtgcc cgtccgcgtg cacaccgtgc tcatctccac 180

ccagcacgac gagaccgtca ccaacgacga gatcgccgcc gacctcaagg agcacgtcat 240

caagcccgtc atcccggaga ggtacctgga cgagaagacc atcttccacc t 291

<210> 60
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 60

gggtatgcga ccgatgagac ccctgagttg atgcccctca gccatgtcct tgccaccaag 60

ctaggtgctc gtctcaccga ggtccgcaag aacggaacct gcccctggct caggcctgat 120

gggaagaccc aggtgacagt cgagtaccgc aatgagggtg gtgccatggt ccccatccgt 180

gtccacaccg tcctcatctc cacccagcac gacgagacag tgaccaatga tgagatcgct 240

gctgacctga aggagcatgt catcaagcct gtcatccctg agcagtacct tgacgagaag 300

accat 305

<210> 61
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 61

ggcctgcgag acctgcacca agaccaacat ggtgatggtg ttcggcgaga tcacgaccaa 60

ggcgaccgtg gactacgaga agatcgtgcg cgacacctgc cgcgagatcg ggttcacctc 120

cgncgacgtg ggcctcgacg ccgnccgctg caaggtgctg gtgaacatcg agcagcagtc 180

ccccgacatc gcgcagggcg tgcacgggca cttcacgnag cggnccgagg agatnggngc 240

gggcgaccag ggncacatgt tcgggtacgn caccgacgag acccccgagc tgatgccgct 300

<210> 62
<211> 558
<212> nucleic acid
<213> Zea mays

<400> 62

gnnnngtncc cnnnttnnnn tntttgncag nacncttntt cgcctgcacg tactcggtcc 60

ggaattcccg ggtcgaccca cgcgtccgcc cacgcgtccg cccacgcgtc cgcccacgcg 120

tccgcccacg cgtccgccca cgcgtccggc ctcttctccc tcttgccggt cccgaataaa 180

gagcagcagc gcaagaggtc ggtagagcga gaagaaggca atggcggccg agagcttcct 240

tttcacctcg gagtccgtga acgaggggca ccccgacaag ctgtgcgacc aggtgtcgga 300

cgccgtgctt gacgcatgcc tcgcgcagga ccccgacagc aaggtggcct gcgagacctg 360

caccaagacc aacatggtga tggtgttcgg cgagatcacg accaaggcga ccgtggacta 420

cgagaagatc gtgcgcgaca cctgccgcga gatcgggttc acctncgacg acgtgggcct 480

tnacgccnac cnntgcaagg tnctggtgaa cattgagcaa naattcccng gactttnngc 540

anggcgttca cnggcant 558

<210> 63
<211> 332
<212> nucleic acid
<213> Zea mays

<400> 63

gcccctgggc tcaggcctga tgggaagacc caggtgacag tcgagtaccg caatgagggt 60

ggtgccatgg tccccatccg tgtccacacc gtcctcatct ccacccagca cgacgagaca 120

gtgaccaatg atgagatcgc tgctgacctg aaggagcatg tcatcaagcc tgtcatccct 180

gagcagtacc ttgacgagaa gaccatcttc caccttaacc catctggccg ctttgtcatg 240

tggacctcac ggcgatgctg gcctcactgg ccgcaagatc atcatgacac ctacggtggc 300

tggggagccc atggtggtgg cgctttctcc gg 332

<210> 64
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 64

ctcggagtct gtgaacgagg gacaccctga caagctctgt gaccaggtct cagatgccgt 60

tcttgacgct tgccttgctg aggaccctga cagcaaggtt gcttgtgaga cctgcaccaa 120

gaccaacatg gtcatggtct ttggtgagat caccaccaag gccaatgttg actacgagaa 180

gattgtcagg gagacctgcc gcaacattgg ttttgtgtca aacgatgttg ggcttgacgc 240

cgaccactgc aagtgctcgt gaacattnag cagcagtccc ctgatattgc tcanggtgtg 300

catggccact tcac 314

<210> 65
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 65

ggacgagaag accatcttcc acctcaaccc gtcggggcgc ttcgtcatcg gcgggcccca 60

cggggacgcc ggcctcaccg gccgcaagat catcatcgac acctacggcg gctggggagc 120

ccacggcggg ggcgccttct ccggcaagga ccccaccaag gtggaccgca gcggggccta 180

cgtcgccagg caggccgcca agagcatcgt ggccagcggc ttcgcccgcc gctgcctcgt 240

gcaggtgtcc tacgccatcg ggtgccggag cccctgtccg tgttcgtcga ctc 293

<210> 66

<211> 289
<212> nucleic acid
<213> Zea mays

<400> 66

gcaaggtggc ctgcgagacc tgcaccaaga cgaacatggt gatggtgttc ggcgagatca 60

ccaccaaggc gagcgtggan tacgagaagn tcgtgcgcga cacctgccgc gagatcgggt 120

tcacctccga cgacgtgggg ctcgacgccg accgctgcaa ggtgctggtg aacatcgagc 180

agcagtcccc cgacatcgcg cagggcgtgc acgggcactt cacgaagcgg cccgaggaga 240

tcggcgccgg cgaccagggc cacatgttcg ggtacgccac cgacgagac 289

<210> 67
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 67

gttgactacg agaagattgt cagggagacc tgccgcaaca ttggttttgt gtcaaacgat 60

gttgggcttg acgccgacca ctgcaaggtg ctcgtgaaca ttgagcagca gtcccctgat 120

attgctcagg gtgtgcatgg ccacttcacc aagcgccccg aggagattgg agctggtgac 180

cagggacaca tgttcgggta tgcgaccgat gagacccctg agttgatgcc cctcagccat 240

gtccttgcca ccaagctagg tgctcgtctc accgaggtcc gcaagaacgg aacctgcccc 300

tggctc 306

<210> 68
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 68

tgacaagctc tgtgaccagg tctcagatgc cgttcttgac gcttgccttg ctgaggaccc 60

tgacagcaag gttgcttgtg agacctgcac caagaccaac atggtcatgg tctttggtga 120

gatcaccacc aaggccaatg ttgactacga gaagattgtc agggagacct gccgcaacat 180

tggttttgtg tcaaacgatg ttgggcttga cgccgaccac tgcaaggtgc tcgtgaacat 240

tgagcagcag tcccctgata ttgctcaggg tgngcatggc cacttcacca agcgccccga 300

gga 303

<210> 69
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 69

caaagaccaa catggtcatg gtctttggtg agatcaccac caaggccaat gtcgactacg 60

agaagattgt cagggagaca tgccgcaaca ttggtttcgt ntcgaacgat gtcgggcttg 120

acgctgacca ctgcaaggtg cttgtgaaca ttgagcagca gtcccctgat attgctcagg 180

gtgtncacgg ccacttcacc aagcgccccg aggagattgg agctggtgac caggggcaca 240

tgtttgggta tgcgactgac gagaccccctg agctgatgcc cctcagccat gtccttgcca 300

<210> 70
<211> 329
<212> nucleic acid
<213> Zea mays

<400> 70

gatcaaagaa gatggcagct gtcgacacat tcctcttcac ctcggagtct gtgaacgagg 60

gacaccctga caagctctgt gaccaggtct cagatgccgt tcttgacgct tgccttgctg 120

aggaccctga cagcaaggtt gcttgtgaga cctgcaccaa gaccaacatg gtcatggtct 180

ttggtgagat caccaccaag gccaatgttg actacgagaa gattgtcagg gagacctgcc 240

gcaacattgg ttttgtgtca aacgatgttg ggcttgacgc cgaccattgc aaggtgcncg 300

tgaanatnng cancagtccc ctgatattg 329

<210> 71
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 71

gctgaggacc ctgacagcaa ggntgcttgc naganctgca ccaagaccaa catggtcatg 60

gtctttggng agatcaccac caaggccaat gtcgactacg agaagattgt cagggagaca 120

tgccgcaaca ttggtttcgt gtcgaacgan gtcgggcntg angctgacca ctgcaaggng 180

cttgtgaaca ttgagcagca gtcccctgat attgctcagg gtgtgcacgg ccacttcacc 240

aagcgccccg aggagattgg agctggtgac caggggcaca tgtttgggta tgcgactnac 300

gaga 304

<210> 72
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 72

cgcttgcctt gctgaggacc ctgacagcaa ggttgcttgt gagacctgca ccaagaccaa 60

catggtcang gncctttggt gagatcacca ccaaggccaa tgttgactac gagaagattg 120

tcagggagac ctgccgcaac attggttttg tgtcaaacga tgttgggctt gacgccgacc 180

actgcaaggt gctcgtgaac attgagcagc agtcccctga tattgctcag ggtgtgcatg 240

gccacttcac caagcgcccc gaggagattg gagctggtga ccagggacac atgttcgggt 300

atgcgac 307

<210> 73
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 73

gccaccgacg agacccccga gctgatgccg ctgagccacg tgctggccac caagctcggc 60

gcgcgcctga cggaggtccg caaggacggc acctgcgcct ggctcaggcc cgacggcaag 120

acccaggtga cggtggagta cgtgaacgag ggcggcgcca tggtgcccgt ccgcgtgcac 180

accgtgctca tctccaccca gcacgacgag accgtcacca acgacgagat cgccgccgat 240

ctcaaggagc acgtcatcaa gcccgtcatc ccggagaggt ac 282

<210> 74
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 74

caagcttggt gctcgtctca cggaggttcg caagaatgga acctgcccct ggctcaggcc 60

cgatgggaag acccaggtga cagtggagta ccgcaacgag ggtggcgcca tggttcccat 120

ccgtgtgcac acagtcctca tctctaccca gcacgacgag acagtcacca acgacgagat 180

tgctgctgac ctgaaggagc acgtcatcaa gccagtcatc cccgagcagt acctcgacga 240

gaagacaatc ttccacctca acccgtctgg ccgcttcgtc atcggcggac tcacggcgac 300

ctggcctcac tggccggaag 320

<210> 75
<211> 370
<212> nucleic acid
<213> Zea mays

<400> 75

agagcatcgt ggccagcggc ctcgcccgcc gctgcctcgt gcaggtgtcc tacgccatng 60

gcgtgccgga gcccctgtca gtgttcgtcg actcctacgg caccgggacc atccccgaca 120

aggagatcct caagatcgtc aaggagaact tcgacttcag gcccgggatg atcaccatca 180

acctcgacct caagaagggc ggcaacaggt tcatcaagac cgccgcatac ggccactttg 240

gccgtgacga cgccgacttc acctgggagg tggtcaagcc cctaaagaag gcatccgctt 300

aagaatgtat tgggaagttc actggacatg aggttcatct tcgtctggct ctgctgatac 360

ctgcaaggat 370

<210> 76
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 76

atggaacctg cccctggctc aggcccgatg ggaagaccca ggtgacagtg gagtaccgca 60

acgagggtgg cgccatggtt cccatccgtg tgcacacagt cctcatctct acccagcacg 120

acgagacagt caccaacgac gagattgctg ctgacctgaa ggagcacgtc atcaagccag 180

tcatccccga gcagtacctc gacgagaaga caatcttcca cctcaacccg tctggccgct 240

tcgtcatcgg cggacctcac ggcgacgctg gcctcactgg ccggaagatc atcatcgaca 300

<210> 77
<211> 315
<212> nucleic acid

<213> Zea mays

<400> 77

ctcagatgcc gttcttgacg cttgccttgc tgaggaccct gacagcaagg ttgcttgtga 60

gacctgcacc aagaccaaca tggtcatggt ctttggtgag atcaccacca aggccaatgt 120

tgactacgag aagattgtca gggagacctg ccgcaacatt ggttttgtgt caaacgatgt 180

tgggcttgac gccgaccact gcaaggtgct cgtgaacatt gagcagcagt cccctgatat 240

tgctcagggt gtgcatggcc attcaccaag cgccccgang agattggagc tggtgaccag 300

gacacatgtt cgggg 315

<210> 78
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 78

ctcttcacct cggagtctgt gaacgaggga caccctgaca agctctgtga ccaggtctca 60

gatgccgttc ttgacgcttg ccttgctgag gaccctgaca gcaaggttgc ttgtgagacc 120

tgcaccaaga ccaacatggt catggtcttt ggtgagatca ccaccaaggc caatgttgac 180

tacgagaaga ttgtcaggga gacctgccgc aacattggtt ttgtgtcaaa cgatgttggg 240

cttgacgccg accactgcaa gtgctcgtga acattgagca gcagtcccct gatattg 297

<210> 79
<211> 448
<212> nucleic acid
<213> Zea mays

<400> 79

ttggtnagat caccaccaag gccaatgttg actacganaa gattgtnagg ganacctgtc 60

gcnacattgg ttttgtgtca aacgatgttg ggcttgacgc cgaccactgc aaggtgctcg 120

tgaacattna gcagnagtnc cctgatattg ctcanggtgt gcatggccac ttnaccaanc 180

gccccganga gattgganct ggtgaccagg gacacatgtt cgggtatgcg accgatgaga 240

cccctnagtt gatgcccctc agccatgtcc ttgccaccaa gctaggtgct cgtctnaccg 300

aggtncncaa gaaccggaac ctgccnctgg ctcangcctg atgngaagac cnatgtgaca 360

gtcnantnnc gnaatgaagg gtggtgccat tgtncccatc ctngtcaaca ccgttcttat 420

ttcaaccaag tnngacgagg acaatgac 448

<210> 80
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 80

caccgtcctc atctccaccc agcacgacga gacagtgacc aatgatgaga tcgctgctga 60

cctgaaggag catgtcatca agcctgtcat ccctgagcag taccttgacg agaagaccat 120

cttccacctt aacccatctg gccgctttgt cattggtgga cctcacggcg atgctggcct 180

cactggccgc aagatcatca ttgacaccta cggtggctgg ggagcccatg gtggtggcgc 240

tttctccggc aaggacccaa ccaaggttga ccgcagcgga gctatgt 287

<210> 81
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 81

gcaatgaggg tggtgccatg gtccccatcc gtgtccacac cgtcctcatc tccacccagc 60

acgacgagac agtgaccaat gatgagatcg ctgctgacct gaaggagcat gtcatcaagc 120

ctgtcatccc tgagcagtac cttgacgaga agaccatctt ccaccttaac ccatctggcc 180

gctttgtcat tggtggacct cacggcgatg ctggcctcac tggccgcaag atcatcattg 240

acacctacgg tggctgggga gcccatggtg gtggcgcttt ctccggcaag 290

<210> 82
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 82

tggacgcctg cctggcgcag gaccccgaca gcaaggtggc ctgcgagacc tgcaccaaga 60

cgaacatggt gatggtgttc ggcgagatca ccaccaaggc gagcgtggac tacgagaaga 120

tcgtgcgcga cacctgccgc gagatcgggn nnacctccga cgacgtgggg ctcgacgccg 180

accgctgcaa ggtgctggtg aacatcgagc agcagtcccc cgacatcgcg cagggcgtgc 240

acgggcactt cacgaagcgg cccgaggaga tcggcgccgg cgaccag 287

<210> 83
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 83

atgcccctca gccatgtcct tgccaccaag ctaggtgctc gtctcaccga ggtccgcaag 60

aacggaacct gcccctggct caggcctgat gggaagaccc aggtgacagt cgagtaccgc 120

aatgagggtg gtgccatggt ccccatccgt gtccacaccg tcctcatctc cacccagcac 180

gacgagacag tgaccaatga tgagatcgct gctgacctga aggagcatgt catcaagcct 240

gtcatccctg agcagtacct tgacgagaag accatcttcc accttaaccc a 291

<210> 84
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 84

tgccgctgag ccacgtgctg gccaccaagc tgggcgcgcg cctcaccgag gtgcgcaaga 60

acggcacctg cgcctggctg aggcccgatc ggcaagaccc aggtgacggt ggagtacgtg 120

aacgagggcg gcgccatggt gcccgtccgc gtgcacaccg tgctcatctc cacccagcac 180

gacgagaccg tcaccaacga cgagatcgcc gccgacctca aggagcacgt catcaagccc 240

gtgatccctg agaagtacct cgacgagaag accatcttcc acc 283

<210> 85
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 85

cgtgaacgag gggcaccccg acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc 60

atgcctcgcg caggaccccg acagcaaggt ggcctgcgag acctgcacca agaccaacat 120

ggtgatggtg ttcggcgaga tcacgaccaa ggcgaccgtg gactacgaga agatcgtgcg 180

cgacacctgc cgcgagatcg ggttcacctc cgacgacgtg ggcctcgaca ccgaccgctg 240

caaggtgctg gtgaacatcg agcagcagtc cccc 274

<210> 86
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 86

ggagcacgtc atcaagccag tcatccccga gcagtacctc gacgagaaga caatcttcca 60

cctcaacccg tctggccgct tcgtcatngg cggacctcac ggcgacgctg gcctcactgg 120

ccggaagatc atcatcgaca cctacggtgg ctggggagcc cacggcgggg gcgccttctc 180

cggcaaggac ccgaccaagg tggaccgcag cggggcctac gtcgcgaggc aggctgccaa 240

gagcatcgtc gccgccggcc tcgcccgcng tgccatcgtc caggtctcct 290

<210> 87
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 87

gtcgacacat tcctcttcac ctcggagtct gtgaacgagg gacaccctga caagctctgt 60

gaccaggtct cagatgccgt tcttgacgct tgccttgctg aggaccctga cagcaaggtt 120

gcttgtgaga cctgcaccaa gaccaacatg gtcatggtct ttggtgagat caccaccaag 180

gccaatgttg actacgagaa gattgtcagg gagacctgcc gcaacattgg ttttgtgtca 240

aacgatgttg ggcttgacgc cgaccactgc aaggtgctcg tgaacattga 290

<210> 88
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 88

gcggccgaga gcttcctttt cacctcggag tccgtgaacg aggggcaccc cgacaagctg 60

tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg cgcaggaccc cgacagcaag 120

gtggcctgcg agacctgcac caagaccaac atggtgatgg tgttcggcga gatcacgacc 180

aaggcgaccg tggactacga gaagatcgtg cgcgacacct gccgcgagat cgggttcact 240

ncgacgacgt gggcctcgac gccgaccgct gcaagnngct ngtgaact 288

<210> 89
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 89

gcgactgacg agacccctga gctgatgccc ctcagccatg gttcccatcc gtgtgcacac 60

agtcctcatc tctacccagc acgacgagac agtcaccaac gacgagattg ctgctgacct 120

gaaggagcac gtcatcaagc cagtcatccc cgagcagtac ctcgacgaga agacaatctt 180

ccacctcaac ccgtctggcc gcttcgtcat cggcggacct cacggcgacg ctggcctcac 240

tggccggaag atcatcatcg acacctacgg tggctgggga gcccacggc 289

<210> 90
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 90

ccctcttgcc ggtcccgaat aaagagcagc agcgcaagag gtcggtagag cgagaagaag 60

gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgaggg gcaccccgac 120

aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca ggaccccgac 180

agcaaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt cggcgagatc 240

acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg acacctgccg cgagatcggg 300

ttcacctccg acgacgtggg cctcgacgcc 330

<210> 91
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 91

gtgctcgtct caccgaggtc cgcaagaacg gaacctgccc ctggctcagg cctgatggga 60

agacccaggt gacagtcgag taccgcaatg agggtggtgc catggtcccc atccgtgtcc 120

acaccgtcct catctccacc cagcacgacg agacagtgac caatgatgag atcgctgctg 180

acctgaagga gcatgtcatc aagcctgtca tccctgagca gtaccttgac gagaagacca 240

tcttccacct taacccatct ggccgctttg tcattggtgg acctcacggc g 291

<210> 92
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 92

gccagcggcc tcgcccgccg ctgcctcgtg caggtgtcct acgccatcgg cgtgccggag 60

cccctgtccg tgttcgtcga ctcctacggc accgggacca tccccgacaa ggagatccta 120

aagatcgtca aggagaactt cgacttcagg ccagggatga tcaccatcaa cctcgacctc 180

aagaagggcg gcaacaggtt catcaagacc gccgcatacg gccactttgg ccgtgacgac 240

gccgacttca cctgggaggt ggtcaagccc ctaaagaagg catcc 285

<210> 93
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 93

ggccacttca ccaagcgccc cgaggagatt ggagctggtg accagggaca catgttcggg 60

tatgcgaccg atgagacccc tgagttgatg cccctcagcc atgtccttgc caccaagcta 120

ggtgctcgtc tcaccgaggt ccgcaagaac ggaacctgcc cctggctcag gcctgatggg 180

aagacccagg tgacagtcga gtaccgcaat gagggtggtg ccatggtccc catccgtgtc 240

cacaccgtcc tcatctccac ccagcacgac gagacagtga cca 283

<210> 94
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 94

actacgagaa gattgtcagg gagacatgcc gcaacattgg tttcgtgtcg aacgatgtcg 60

ggcttgacgc tgaccactgc aaggtgcttg tgaacattga gcagcagtcc cctgatattg 120

ctcagggtgt gcacggccac ttcaccaagc gccccgagga gattggagct ggtgaccagg 180

ggcacatgtt tgggtatgcn actgacgaga cccctgagct gatgcccctc agccatgtcc 240

ttgccaccaa gcttggtgtc gtctcacnga aggttcgcaa gaatggaacc tgccccnt 298

<210> 95
<211> 469
<212> nucleic acid
<213> Zea mays

<400> 95

cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg tagagcgaga 60

agaaggcaat ggcggccgag agcttccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcnaccag gtgtcggacg ccgtgcttga cncatgcctc gcgcaggacc 180

ccnacagcaa ggtggcctgc nagacctgca ccaanaccaa catggtgatg gtgttcggcg 240

agatcacgac caangcgacc gtggactacg agaagatcgt gcgccgacac ctgccgcgag 300

atcgggttca ccttcgncga cgtgngccct tgactccnnc ccggtgcaag gtgctggtga 360

acattnatca tcaatncccc gacattnntc aaggcnttca cggcacttta cgaaacggcc 420

cnangagatc ggccgggcca acagngccac atnttcgggt cccccccca 469

<210> 96
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 96

aacgatgttg ggcttgacgc cgaccactgc aaggtgctcg tgaacattga gcagcagtcc 60

cctgattgct cagggtgtgc atggccactt caccaagcgc cccgaggaga ttggagctgg 120

tgaccaggga cacatgttcg ggtatgcnac cgatgagacc cctgagttga tgcccctcag 180

ccatgtcctt gccaccaagc taggtgctcg tctcaccgag gtccgcaaga acggaacctg 240

cccctggctc aggcctgatg ggaagaccca ggtgacagtc gagtaccgca aaa 293

<210> 97
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 97

cggnacgntg gcgtgaacga ggggcaccca gacaagctgt gcgaccaggt gtcggacgcg 60

gtgctggacg cctgcctggc gcagganccc gacagcaagg tggcctgcga gacctgcacc 120

aagacgaaca tggtgatggt gttcggcgag atcaccacca aggcgagcgt ggactacgag 180

aagatcgtgc gcgacacctg ccgcgagatc gggttcacct ccgacgacgt ggggctcgac 240

gccgaccgct gcaaggtgct ggtgaacatc gagcagcagt 280

<210> 98
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 98

catggtggtg gcgctttctc cggcaaggac ccaaccaagg ttgaccgcag cggagcctat 60

gtcgcgaggc aggctgccaa gagcatcgtc gccagcggcc ttgctcgccg cgccatcgtc 120

caggtgtctt acgccatcgg cgtgccccgag cctctctccg tgttcgtcga cacgtacggc 180

accggcgcga tccccgacaa ggagatcctc aagattgtca aggagaactt cgatttcagg 240

cctggcatga tcatcatcaa ccttgacctc aagaaaggcg gcaag 285

<210> 99
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 99

aggtgacagt cgagtaccgc aatgagggtg gtgccatggt ccccatncgt gtccacaccg 60

tcctcatctc cacccagcac gacgagacag tgaccaatga tgagatcgct gctgacctga 120

aggagcatgt catcaagcct gtcatncctg agcagtacct tgacgagaag accatcttcc 180

accttaaccc atctggccgc tttgtcattg gtggacctca cggcgatgct ggcctcactg 240

gccgcaagat catcattgac acctacggtg gctgggga 278

<210> 100
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 100

gtgaccaatg atgagatcgc tgctgacctg aaggagcatg tcatcaagcc tgtcatccct 60

gagcagtacc ttgacgagaa gaccatcttc caccttaacc catctggccg ctttgtcatt 120

ggtggacctc acggcgatgc tggcctcact ggccgcaaga tcatcattga cacctacggt 180

ggctggggag cccatggtgg tggcgctttc tccggcaagg acccaaccaa ggttgaccgc 240

agcgganccct atgtcgcaag gcaggctgcc aagag 275

<210> 101
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 101

gatcgctgct gacctgaagg agcatgtcat caagcctgtc atccctgagc agtaccttga 60

cgagaagacc atcttccacc ttaacccatc tggccgcttt gtcattggtg gacctcacgg 120

cgatgctggc ctcactggcc gcaagatcat cattgacacc tacggtggct ggggagccca 180

tggtggtggc gctttctccg gcaaggaccc aaccaaggtt gaccgcagcg gagcctatgt 240

cgcaaggcag gctgccaaga gcatcgtcgc cagcggcttg ctcgccgcgc c 291

<210> 102
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 102

agaagatggc cggactcgac accttcctct tcacctcgga gtccgtgaac gagggacacc 60

ctgacaagct ctgcgaccag gtctcagatg ctgttctgga cgcttgcctg ctgaggaccc 120

tgacagcaag gttgcttgcg agacctgcac caagaccaac atggtcatgg tctttggtga 180

gatcaccacc aaggccaatg tcgactacga gaagattgtc agggagacat gccgcaacat 240

tggtttcgtg tcgaacgatg tcgggcttga cgctgaccac tgcaagtgct tgtgaacatt 300

g 301

<210> 103
<211> 336
<212> nucleic acid

<213> Zea mays

<400> 103

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ctccctcttg ccggtcccga ataaagagca gcagcgcaag aggtcggtag agcgagaaga    60

aggcaatggc ggccgagagc ttccttttna cctcggagtc cgtgaaacga ggggcncccc   120

gacaagctgt gcgaccaggt gtcggacgcc gtgcttgacg catgcctcgc gcaggacccc   180

gacagcaagg tggcctgcga gacctgcacc aagaccaaca tggtgatggt gttcggcgag   240

atcacgacca aggcgaccgt ggactacgag aagatcgtgc gcgacacctg ccgcgagatc   300

gggttcacct ccgacgacgt gggcctcgac gccgac                             336
```

<210> 104
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 104

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tgagaagtac ctcgacgaga agaccatctt ccacctcaac ccgtccgggc gcttcgtcat    60

cggcgggccc cacggtgacg ccggcctcac cggccgcaag atcatcatcg acacgtacgg   120

cggctgggga gcccacggcg gtggcgcctt ctccggcaag gaccccacca aggtggaccg   180

cagcggcgcc tacgtggcca ggcaggccgc caagagcatc gtggccagcg gctcgcccgc   240

cgctgcctcg tgcagtgtcg tacgccatcg ctgccg                             276
```

<210> 105
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 105

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gagattggag ctggtgacca gggacacatg ttcgggtatg cgaccgatga gacccctgag    60

ttgatgcccc tcagccatgt ccttgccacc aagctaggtg ctcgtctcac cgaggtccgc   120

aagaacggaa cctgcccctg gctcaggcct gatgggaaga cccaggtgac agtcgagtac   180

cgcaatgagg gtggtgccat ggtccccatc cgtgtccaca ccgtcctcat ctccacccag   240

cacgacgaga cagtgaccaa tgatgagatc gtgctgacct gaaggag                 287
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<210> 106

<211> 303
<212> nucleic acid
<213> Zea mays

<400> 106

accgtcctca tctccaccca gcacgacgag acagtgacca atgatgagat cgctgctgac 60

ctgaaggagc atgtcatcaa gcctgtcatc cctgagcagt accttgacga gaagaccatc 120

ttccacctta acccatctgg ccgctttgtc attggtggac ctcacggcga tgctggcctc 180

actggccgca agatcatcat tgacacctac ggtggctggg gagcccatgg tggtggcgct 240

ttctccggca aggacccaac caagttgacc gcagcgganc tatgtcgcaa ggcagctgcc 300

aag 303

<210> 107
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 107

gtgaccaggt ctcagatgcc gttcttgacg cttgccttgc tgaggacccct gacagcaagg 60

ttgcttgtga gacctgcacc aagaccaaca tggtcatggt ctttggtgag atcaccacca 120

aggccaatgt tgactacgag aagattgtna gggagacctg ccgcaacatt ggttttgtgt 180

caaacgatgt tgggcttgac gccgaccact gcaaggtgct cgtgaacatt gagcagcagt 240

cccctgatat tgctcagggt gtgcatggcc acttcacca 279

<210> 108
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 108

ctcttctccc tcttgccggt cccgaataaa gagcagcagc gcaagaggtc ggtagagcga 60

gaagaaggca atggcggccg agagcttcct tttcacctcg gagtccgtga acgaggggca 120

ccccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc tcgcgcagga 180

ccccgacagc aaggtggcct gcgagacctg caccaagacc aacatggtga tggtgttcgg 240

cgagatcacg accaaggcga ccgtggacta cgagaagatc gtgcgcgaca cctgccgcga 300

gatcgggttc acctccgacg acgtgggcct 330

<210> 109
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 109

ccgacggcaa gacccaggtg acggtggagt acgtgaacna nggcggcgcc atggtgcccg 60

tccgcntgca caccgtgctc atctccaccc agcacgacga gaccgtcacc aangacgagn 120

tcgccgccgn cctcanggag cacgtcntna agcccgtcat cccgganagg tacctggacg 180

anaagaccnt cttncacctc aacccgtcgg gggcgnttcg tcntcggcgg gccccacggg 240

gacnccggcc tnaccggccg caagntgntc ntngncacct acngcggntg gggagccc 298

<210> 110
<211> 498
<212> nucleic acid
<213> Zea mays

<400> 110

cccctctttn gcctatccgg gccgacccac gcgncacgcg gnggctcngn gcgtatcgag 60

cccacggatt ttggcntctn ctccggcaag gaccccaccn nggtgggggn gnattgggnc 120

ctaccgtcgc caggcangcc gacaagagca tngnggccag cggcctcgcn cgccgntgcc 180

tcgngcaggt gtcctacgcc atcggcgtgc cggagcccct gtccgtgttc gtngactcct 240

acggcaccgg gaccatcccc gacaaggaga tcctaaagat cgtnaaggag aacttcgact 300

tcaggccagg gatggtcacc atcaacctcg acctcaagaa gggcggcaac aggttcatca 360

agaccgccgn atacggccac tttggcccgt gacgacgccg acttcacctg ggaggtggtc 420

aagcccctaa agaaggcatc cgcttaagaa tgtattgnga aagttcactg gacatgaagg 480

atcatcttcc tctnggct 498

<210> 111
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 111

gcccgcagat caaagaagat ggcagctgtc gacacattcc tcttcacctc ggagtctgtg 60

aacgagggac accctgacaa gctctgtgac caggtctcag atgccgttct tgacgcttgc 120

cttgctgagg accctgacag caaggttgct tgtgagacct gcaccaagac caacatggtc 180

atggtctttg gtgagatcac caccaaggcc aatgttgact acgagaagat tgtcagggag 240

acctgccgca acattggttt tgtgtcaaac gatgttgggc ttga 284

<210> 112
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 112

ggcgagatca cgaccaaggc gaccgtggac tacgagaaga tcgtgcgcga cacctgccgc 60

gagatcgggt tcacctccga cgacgtgggc ctcgacgccg accgctgcaa ggtgctggtg 120

aacatcgagc agcagtcccc cgacatcgcg cagggcgtgc acgggcactt cacgaagcgg 180

cccgaggaga tcggcgcggg nnaccagggc cacatgttcg ggtacgccac cgacgagacc 240

cccgagctga tgccgctgag ccaacgtgct ggccaacaag ctgggcgcgg ggctcaccga 300

ngtgcgaaaa acggcaactg cgctggct 328

<210> 113
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 113

gggggcgcct tctccggcaa ggacccgacc aaggtggacc gcagcggggc ctacgtcgcg 60

aggcaggctg ccaagagcat cgtcgccgcc ggcctcgccc gccgcgccat tgtccaggtc 120

tcctacgcca tcggcgtgcc cgagcccctt tcggtgttcg tggacacgta cggcaccggc 180

gccatccccg acaaggagat cctgaagatc gtgaaggaga acttcgactt caggcccggc 240

atgatcatca tcaacctcga cctcaagaaa ggcggcaacg ggcgcta 287

<210> 114
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 114

cgacgccgaa ccgctgcaag gtgctggtga acatcgagca gcagtccccc gacatcgcgc 60

agggcgtgca cgggcacttc acgaagcggc ccgaggagat cggcgcgggc gaccagggcc 120

acatgttcgg gtacgccacc gacgagaccc ccgagctgat gccgctgagc cacgtgctgg 180

ccaccaagct gggcgcgcgc ctcaccgagg tgcgcaagaa cggcacctgc gcctggctga 240

ggcccgacgg caagacccag g 261

<210> 115
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 115

gggccacttc accaagcgcc ccgaggagat tggagctggt gaccagggac acatgttcgg 60

gtatgcgacc gatgagaccc ctgagttgat gcccctcagc catgtccttg ccaccaagct 120

aggtgctcgt ctcaccgagg tccgcaagaa cggaanctgc ccctggctca ggcctgatgg 180

gaagacccag gtgacagtcg agtaccgcaa tgagggtggt gccatggtcc ccatccgtgt 240

ccacaccgtc ctcatctcca cccagcacga cgagacatga ccaatgatga gatc 294

<210> 116
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 116

ctgaaggagc acgtcatcaa gccagtcatc cccgagcagt acctcgacga gaagacaatc 60

ttccacctca acccgtctgg ncgcttcgtc atcggcggac ctcacggcga cgccggcctc 120

actggccgga agatcatcat cgacacctac ggtggctggg gagcccacgg cgggggcgcc 180

ttctccggca aggacccgac caangtggac cgcagcgggg cctacgtcgc gangcaggct 240

gccaagagca tcgtcgccgc cggcctcgcc gcngcgccat cgtccaggtc tctagcatgg 300

gtgccgancc tatcgtgt 318

<210> 117
<211> 256
<212> nucleic acid

<213> Zea mays

<400> 117

gagaagtacc tcgacgagaa gaccatcttc cacctcaacc cgtccgggcg cttcgtcatc 60

ggcgggcccc acggtgacgc cggcctcacc ggccgcaaga tcatcatcga cacgtacggc 120

ggctggggag cccacggcgg tggcgccttc tccggcaagg accccaccaa ggtggaccgc 180

agcggcgcct acgtggccag gcaggccgcc aagagcatcg tggccagcgg cttcgcccgc 240

cgctgccttc tgcaag 256

<210> 118
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 118

gtcgacacat tcctcttcac ctcggagtct gtgaacgagg gacaccctga caagctctgt 60

gaccaggtct cagatgccgt tcttgacgct tgccttgctg aggaccctga cagcaaggtt 120

gcttgtgaga cctgcaccaa gaccaacatg gtcatggtct ttggtgagat caccaccaag 180

gncnatgttg actacgagaa gattgtcagg gagacctgcc gcaacattgg ttttgtgtca 240

aacgatgttg ggcttgacgc cgaccactgc aaggt 275

<210> 119
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 119

gtcgacacat tcctcttcac ctcggagtct gtgaacgagg gacaccctga caagctctgt 60

gaccaggtct cagatgccgt tcttgacgct tgccttgctg aggaccctga cagcaaggtt 120

gcttgtgaga cctgcaccaa gaccaacatg gtcatggtct ttggtgagat caccaccaag 180

gccattgttg actacgagaa gattgtcagg gagacctgcc gcaacattgg ttttgtgtca 240

aacgatgttg ggcntgacgc cgaccactgc aaggtg 276

<210> 120
<211> 309
<212> nucleic acid

<213> Zea mays

<400> 120

cggcacggtg gtcgcagcat cgctgctgac ctgaaggagc atgtcatcaa gcctgtnatc 60

cctgagcagt accttgacga gaagaccatn ttccacctta acccatctgg ccgctttgtc 120

attggtggac ctcacggcga tgctggcctc actggccgca agatcatcat tgacacctac 180

ggtggctggg gagcccatgg tggtggcgct ttctccggca aggacccaac caaggttgac 240

cgcagcggag cctatgtcgc aangcangct gccaagagca tcgtcgccaa cggcttgctc 300

gccgcgcca 309

<210> 121
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 121

ctcagggtgt gcatggccac ttcaccaagc gccccgagga gattggagct ggtgaccagg 60

gacacatgtt cgggtatgcg accgatgaga cccctgagtt gatgcccctc agccatgtcc 120

ttgccaccaa gctaggtgct cgtctcaccg aggtccgcaa gaacggaacc tgcccctggc 180

tcaggcctga tgggaagacc caggtgacag tcgagtaccg caatgagggt ggtgccatgg 240

tccccatccg tgtccacacc gtcctca 267

<210> 122
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 122

gcaaggtgct tgtgaacatt gagcagcagt cccctgatat tgctcagggt gtgcacggcc 60

acttcaccaa gcgccccgag gagattggag ctggtgacca ggggcacatg tttgggtatg 120

cgactgacga gacccctgag ctgatgcccc tcagccatgt ccttgccacc aagcttggtg 180

ctcgtctcac ggaggttcgc aagaatggaa cctgcccctg gctcaggccc gatgggaaga 240

cccagtgaca attggantac cgcaacgagg gtggccc 277

<210> 123

<211> 264
<212> nucleic acid
<213> Zea mays

<400> 123

gccacatgtt cgggtacgcc accgacgaga cccccgagct gatgccgctg agccacgtgc 60

tggccaccaa gctgggcgcg cgcctcaccg aggtgcgcaa gaacggcacc tgcgcctggc 120

tgaggcccga cggcaagacc caggtgacgg tggagtacgt gaacgagggc ggcgccatgg 180

tgcccgtccg cgtgcacacc gtgctcatct ccacccagca cgacgagacc gtcaccaacg 240

acgagatcgc ccgccgacct caag 264

<210> 124
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 124

gaagattgtc agggagacct gccgcaacat tggttttgtg tcaaacgatg ttgggcttga 60

cgccgaccac tgcaaggtgc tcgtgaacat tgagcagcag tcccctgata ttgctcaggg 120

tgtgcatggc cacttcacca agcgccccga ggagattgga gctggtgacc agggacacat 180

gttcgggtat gcgaccgatg agacccctga gttgatgccc ctcagccatg tccttgccac 240

caagctaggt gctcgtctca ccgaggtcc 269

<210> 125
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 125

atgccgctga gccacgtgct ggccaccaag ctgggcgcgc gnctcaccga ggtgcgcaag 60

aacggcacct gcgcctggct gaggcccgac ggcaagaccc aggtgacggt ggagtacgtg 120

nacgagggcg gcgccatggt gcccgtccgc gtgcacaccg tgctcatctc cacncancan 180

gnngngntng tcaccaacna cgagatcgcc gccgacctca aggagcacgt catcaagccc 240

gtgatccctg agaagtacct cgacgagaag acca 274

<210> 126

<211> 260
<212> nucleic acid
<213> Zea mays

<400> 126

ggaccctgac agcaaggttg cttgcgagac ctgcaccaag accaacatgg tcatggnctt 60

tggtgagatc accaccaagg ccaatgtcga ctacgagaag attgtcaggg agacatgccg 120

caacattggt ttcgtgtcga acgatgtcgg gcttgacgct gaccactgca aggtgcttgt 180

gaacattgag cagcagtccc ctgatattgc tcagggtgtg cacggccact tcaccaagcg 240

ccccgaggag attggagctg 260

<210> 127
<211> 516
<212> nucleic acid
<213> Zea mays

<400> 127

gnnnaaagga gatttgatan gntttntggg gaggnanagn tnatgccgta ccggtccgga 60

attcccgggt cgacccacgc gtccggagaa gaccatcttc cacctcaacc cgtccgggcg 120

cttcgtcatc ggcgggcccc agggtgacgc cggcctcacc ggccgcaaga tcatcatcga 180

cacgtacggc ggctggggag cccacggcgg tggcgccttc tccggcaagg accctaccaa 240

ggtggaccgc agcggcgcct acgtggccag gcaggccgnt cangagcatc gtggccagcg 300

gcctcncccg ccgctgnctc gtgcaggtgt cgtacgcnat cggcgtgcac ggagcccntg 360

tatcgtattc gtaactcgta cggaacnggn acgatncnng anaaggatat actanangat 420

agtgaaggag aantnntnct tnatgcnnnn gttgatnagg atnnaanntn nannngnnna 480

angttnnnnn nnggnnnatt nnnnantntn nnnnta 516

<210> 128
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 128

ggagcatgtc atcaagcctg tcatccctga gcagtacctt gacgagaaga ccatcttcca 60

ccttaaccca tctggccgct ttgtcattgg tggacctcac ggcgatgctg gcctcactgg 120

ccgcaagatc atcattgaca cctacggtgg ctggggagcc catggtggtg gcgctttctc 180

cggcaaggac ccaaccaagg ttgaccgcag cggagcctat gtcgcaangc aggctgccaa 240

gagcatcgtc gccagcggcc ttgc 264

<210> 129
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 129

caagaatgga acctgcccct ggctcaggcc cgatgggaag acccaggtga cagtggagta 60

ccgcaacgag ggtggcgcca tggttcccat ccgtgtgcac acagtcctca tctctaccca 120

gcacgacgag acagtcacca acgacgagat tgctgctgac ctgaaggagc acgtcatcaa 180

gccagtcatc cccgagcagt acctcgacga gaagacaatc ttccacctca acccgtctgg 240

ccgcttcgtc atcggcggac ctcacggcga 270

<210> 130
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 130

cacgtcatca agcccgtgat ccctgagaag tacctcgacg agaagaccat cttccacctc 60

aacccgtccg ggcgcttcgt catcggcggg ccccacggtg acgccggcct caccggccgc 120

aagatcatca tcgacacgta cggcggctgg ggagcccacg gcggtggcgc cttctccggc 180

aaggacccca ccaaggtgga ccgcagcggc gcctacgtgg ccaggcaggc cgccaagagc 240

atcgtggcc 249

<210> 131
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 131

gtcatcaagc ctgtcatccc tgagcagtac cttgacgaga agaccatctt ccaccttaac 60

ccatctggcc gctttgttat tggtggacct cacggcgatg ctggcctcac tggccgcaag 120

atcatcattg acacctacgg tggctgggga gcccatggtg gtggcgcttt ctccggcaag 180

gacccaacca aggttgaccg cagcggagcc tatgtcgcaa ggcaggctgc caagagcatc 240

gtcgccagcg gccttgctcg ccgcgccatc 270

<210> 132
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 132

ctgcancaag accaacatgg tcatggtctt tggtgagatc accaccaagg ccaatgttga 60

ctacgagaag attgtcaggg agacctgccg caacattggt tttgtgtcaa acgatgttgg 120

gcttgacgcc gaccactgca aggtgctcgt gaacattgag cagcagtccc ctgatattgc 180

tcagggtgtg canggccact tcaccaagcg ccccgaggag attggagctg gtgaccaggg 240

acacatgttc gggtatgcga ccgat 265

<210> 133
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 133

accggccgca agatcatcat cgacacgtac ggcggctggg gagcccacgg cggggngcct 60

tctccggcaa ggaccccacc aaggtggacc ncagcggcgc ctacgtggcc aggcaggccg 120

ccaagagcat cgtngccagc ngcctcgccc gccgctgcct cgtgcaggtg tcgtacgcca 180

tcggntgccg gagcncctgt ccgtgttcgt caactcgtac ggcaccggca cgatccccga 240

caaggagatc ctcaagatcg tgaaggagna ttcgattcag gccg 284

<210> 134
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 134

gggagacatg ccgcaacatt ggtttcgtgt cgaacgatgt cgggcttgac gctgaccact 60

gcaaggtgct tgtgaacatt gagcagcagt cccctgatat tgctcagggt gtgcacggcc 120

acttaccaag cgccccgagg agattggagc tggtgaccag gggcacatgt ttgggtatgc 180

gactgacgag acccctgagc tgatgcccct cagccatgtn cttgccacca agcttggtgc 240

tcgtctnaca aangntcgca agaaatggaa cctggcccct ggcttaagcc cgatnggnaa 300

gacccaagtg acaagtggaa tanccgnaac caagggtggc nccatgggtt cccattcgtg 360

tgcacacaag tccttaattt ttacccaaca ccgaccaagg ccagttancc aacgaccagg 420

anttggcnt 429

<210> 135
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 135

atcggcgggc cccacggtga cgccggcctc accggccgca agatcatcat cgacacgtac 60

ggcggctggg gagcccacgg cggtggcgcn ttctccggca aggaccccac caaggtggac 120

cgcagcggcg cntacgtggc caggcaggcc gccaagagca tcgtngccag cngctcgcnc 180

gccgntgcnt ngtgcaggtg tcgtacgcca tcggctgccg gagcccctgt ccgtgttngt 240

caactcgtac ggcngcggca cgntccccga caaggagntc tc 282

<210> 136
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 136

gtgatggtgt tcggcgagat cacgaccaag gcgaccgtgg actacgagaa gatcgtgcgc 60

gacacctgcc gcgagatcgg gttcacctcc gacgacgtgg gcctcgacgc cgaccgctgc 120

aaggtgctgg tgaacatcga gcagcagtcc cccgacatcg cgcagggcgt gcacgggcat 180

tcacgaagcg gcccgaggag atcggcgcgg gcgaccaggg ccacatgttc gggtacgcca 240

ccgacgagac ccccgagtga tgccgtnagc natgtgngc 279

<210> 137
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 137

ctgagaagta cctcgacgag aagaccatct tccacctcaa cccgtccggg cgcttcgtca 60

ttggcggggc ccaaggtgaa ggcgggctta acgggcggaa anntnntcat cganacgnan 120

ggcggttggg gagcccacgg cggtggcgcn ttctccggca aggaccccac caaggtggac 180

cgcagcggcg cctacgtggc caggcaggcc gccaagagca tcgtggccag cggcttcgcc 240

cgcngctgcc tcgtgcaggt gtcgtacgcc atcgggtgcc gga 283

<210> 138
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 138

cggacntggn gaaaggagca cgtcatcaag ccagtcatcc ccgagcagta cctcgacgag 60

annntcaatc ttccacctca acccgtctgg ccgcttcgtc atcggcggac ctcacggcga 120

cgctggcctc actggccgga agatcatcat cgacacctac ggtggctggg gagcccacgg 180

cgggggcgcc ttctccggca aggacccgac caaggtggac cgcagcgggg cctacgtcgc 240

gaggcaggct gccaagagca tcgtcgccgc ggcctcgccc gccgcgcatt gtccagt 297

<210> 139
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 139

ctccctcttg ccggtcccga ataaagagca gcagcgcaag aggtcggtag agcgagaaga 60

aggcaatggc ggccgagagc ttccttttca cctcggagtc cgtgaacgag gggcacccga 120

caagctgtgc gaccaggtgt cggacgccgt gcttgacgca tgcctcgcgc aggaccccga 180

cagcaaggtg gcctgcgaga cctgcaccaa gaccaacatg gtgatggtgt tcggcgagat 240

cacgaccaag gcgaccgtgg actacgagaa gatcgtgcgc gacacctgcc gcgagatcgg 300

gttcacctcc gacgacg 317

<210> 140
<211> 277
<212> nucleic acid

<213> Zea mays

<400> 140

cgctgcctcg tgcaggtgtc gtacgccatc ggcgtggccg gagcccctgt ccgtgttcgt 60

caactcgtac ggcaccggca cgatccccga caaggagatc ctcaagatcg tgaaggagaa 120

cttcgacttc aggcccggga tgatcagcat caacctcgac ctgaagaagg gcggcaacag 180

gttcatcaag accgccgcct acggccactt cggccgtgac gacgccgact tcacctggga 240

ggtggtgaag cccctcaagt tcgacaaggc atcgctt 277

<210> 141
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 141

ccgagcctct ctccgtgttc gtcgacacgt acggcaccgg cgcgatcccc gacaaggaga 60

tcctcaagat tgtcaaggag aacttcgatt tcaggcctgg catgatcatc atcaaccttg 120

acctcaagaa aggcggcaac gggcgctacc tcaagacggc ggcctacggc cactttggaa 180

gggacgaccc tgacttcacc tgggaggtgg tgaagccact caagtcggag aaaccttctg 240

cctaaggcgg cctttttttc agtaagaagc ttttggtgg 279

<210> 142
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 142

caaggttgac cgcagcggag cctatgtcgc aaggcaggct gccaagagca tcgtcgccag 60

cngccttgct cgccgcgcca tcgtccaggt gtcttacgcc atcggcgtgc ccgagcctct 120

ctccgtgttc gtcgacacgt acggcaccgg cgcgatcccc gacaaggaga tcctcaagat 180

tgtcaaggag aacttcgatt tcaggcctgg catgatcatc atcaaccttg acctcaagaa 240

aggcggcaac gggcgctacc tca 263

<210> 143
<211> 287
<212> nucleic acid

<213> Zea mays

<400> 143

cgtcatcaag ccagtcatcc ccgagcagta cctcgacgag aagacaatct tccacctcaa 60

cccgtctggc cgtttcgtca tcggcggacc tcacggcgac gccggcctca ctggccggaa 120

gatcatcatc gacacctacg gtggctgggg agcccacggc gggggcgcct tctccggcaa 180

ggacccgacc aaggtggacc gcagcggggc ctacgtcgcg aggcaggctg ccaagagcat 240

cgtcgccgcc ggccttcgcc cgcngcgcca tcgtccaggt ctctaag 287

<210> 144
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 144

ggccacttca ccaagcgccc cgaggagatt ggagctgntg accagggaca catgttcggg 60

tatgcgaccg atgagacccc tgagttgatg cccctcagcc atgtccttgc caccaagcta 120

ggtgctcgtc tcaccgaggt ccgcaagaac ggaacctgcc cctggctcag gcctgatggg 180

aagacccagg tgacagtcga gtaccgcaat gagggtggtg ccatggtccc catccgtgtc 240

cacaccgtcc tcatctccac ccgcacgacg agacagtgac 280

<210> 145
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 145

ttcacctccg acgacgtggg cctcgacgcc gaccgctgca aggtgctggt gaacatcgag 60

cagcagtccc ccgacatcgc gcagggcgtg cacgggcact tcacgaagcg gcccgaggag 120

atcggcgcgg gcgaccaggg ccacatgttc gggtacgcca ccgacgagac cccсgagctg 180

atgccgctga gccacgtgct ggccaccaag ctgggcgcgc gcctcaccga ggtgcgcaag 240

aacggcactg g 251

<210> 146
<211> 270
<212> nucleic acid

<213> Zea mays

<400> 146

atggtcccca tccgtgtcca caccgtcctc atctccaccc agcacgacga gacagtgacc 60

aatgatgaga tcgctgctga cctgaaggag catgtcatca agcctgtcat ccctgagcag 120

taccttgacg agaagaccat cttccacctt aacccatctg gccgctttgt cattggtgga 180

cctcacggcg atgctggcct cactggccgc aagatcatca ttgacaccta cggtggctgg 240

ggagcccatg gtggtggcgt ttctccggca 270

<210> 147
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 147

agacctgccg caacattggt tttgtgtcaa acgatgttgg gcttgacgcc gaccactgca 60

aggtgctcgt gaacattgag cagcagtccc ctgatattgc tcagggtgtg catggccact 120

tcaccaagcg ccccgaggag attggagctg gtgaccaggg acacatgttc gggtatgcga 180

ccgatgagac ccctgagttg atgcccctca gccatgtcct tgccaccaag ctaggtgctc 240

gtctcaccga ggtccgcaag aacggaactg cccctggctc agcctgatgg gaagaccagt 300

gacagtcgag 310

<210> 148
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 148

ccaggtctcc tacgccatcg gcgtgcccga gccccttttcg gtgttcgtgg acacgtacgg 60

caccggcgcg atccccgaca aggagatcct gaagatcgtg aaggagaact tcgacttcag 120

gcccggcatg atcatcatca acctcgacct caagaaaggc ggcaacgggc gctacctcaa 180

gacggcggcc tacgggcact ttgggaggga cgaccccgac ttcacctggg aggtggtgaa 240

gcccctcaag gcggagaagc cgtcttctgc atgaggcgcc tcctctgttt ng 292

<210> 149

<211> 279
<212> nucleic acid
<213> Zea mays

<400> 149

aggtgacagt cgagtaccgc aatgagggtg gtgccatggt ccccatgcgt gtccacaccg 60

tcctcatact ccacccagca cgacgagaca gtgaccaatg atgagatcgc tgctgacctg 120

aaggagcatg tcatcaagcc tgtcatcctg agcagtacct tgacgagaag accatcttcc 180

accttaacnc atctggccgc tttgtcattg gtggacctca cggcgatgct ggcctcactg 240

gccgcaagat catcattgac acctacggtg gctggggag 279

<210> 150
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 150

ctccctcttg ccggtcccga ataaagagca gcagcgcaag aggtcggtag agcgagaaga 60

aggcaatggc ggccgagagc ntccttttca cctcggagtc cgtgaacgag gggcaccccg 120

acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc atgcctcgcg caggaccccg 180

acagcaaggt ggcctgcgag acctgcacca agaccaacat ggtgatggtg ttcggcgaga 240

tcacgaccaa ggcgaccgtg gacnacgaga agatcgtgcg cgacacctgc cgcgagatcg 300

ggttcactcc gacgacgtgg gc 322

<210> 151
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 151

gaataaagag cagcagcgca agaggtcggt agagcgagaa gaaggcaatg gcggccgaga 60

gcttcctttt cacctcggag tccgtgaacg aggggcaccc cgacaagctg tgcgaccagg 120

tgtcggacgc cgtgcttgac gcatgcctcg cgcaggaccc cgacagcaag gtggcctgcg 180

agacctgcac caagaccaac atggtgatgg tgttcggcga gatcacgacc aaggcgaccg 240

tggactacga gaagatcgtg cgcgacacct gccgcgagat cgg 283

<210> 152
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 152

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggcctgcg agacctgcac caagaccaac atggtgatgg 240

tgttcggcga gatcacgacc aaggcgaccg tggactacga gaagatcgtg cgcgacacct 300

gccgcgagat cgggtt 316

<210> 153
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 153

gcatggccac ttcaccaagc gccccgagga gattngagct ggtgaccagg gacacatgtt 60

ccgggtatgc gaccgatgag acccctgagt tgatgcccct cagccatgtc cttgccacca 120

agctaggtgc tcgtctcacc gaggtccgca agaacggaac ntgcccctgg ctcagggctg 180

atgggaagac ccaggtgaca gtcgagtacc gcaatgaggg tggtgccatg gtccccatcc 240

gtgtccacac cgtcctcatc tccacccagc acgacga 277

<210> 154
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 154

tgtcatcaag cctgtcatcc ctgagcagta ccttgacgag aagaccatct tccaccttaa 60

cccatctggc cgctttgtca ttggtggacc tcacggcgat gctggcctca ctggccgcaa 120

gatcatcatt gacacctacg gtggctgggg agcccatggt ggtggcgctt tctccggcaa 180

ggacccaacc aaggttgacc gcagcggacc tatgtcgcaa ggcaggctgc caagagcatc 240

gtcgccagcg gccttgctcg ccgcgccatc gt 272

<210> 155
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 155

ccctcttgcc ggtcccgaat aaagagcagc agcgcaagag gtcggtagag cgagaagaag 60

gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgaggg gcaccccgac 120

aagctgtgcg accaggtgtc ggacnccgtg cttgacgcat gcctcgcgca ggaccccgac 180

agcaaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt cggcgagatc 240

acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg acacctgccg cgagatc 297

<210> 156
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 156

gtcggtagag cgagaagaag gcaatggcgg ccgagagctt ccttttcacn tcggagtccg 60

tgaacgaggg gcaccccgac aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat 120

gcctcgcgca ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag accaacatgg 180

tgatggtgtt cggcgagatc acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg 240

acacctgccg cgagatcggg ttcacct 267

<210> 157
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 157

aggagattgg agctggtgac caggggcaca tgtttgggta tgcgactgac gagacccctg 60

agctgatgcc cctcagccat gtccttgcca ccaagcttgg tgctcgtctc acggaggttc 120

gcaagaatgg aacctgcccc tggctcaggc ccgatgggaa gacccaggtg acagtggagt 180

accgcaacga gggtggcgcc atggttccca tccgtgtgca cacagtcntc atctctaccc 240

agcacgacga gacagtcacc a 261

<210> 158
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 158

gcccctcagc catgtccttg ccaccaagct aggtgctcgt ctcaccgagg tccgcaagaa 60

cggaacctgc ccctggctca ggcctgatgg gaagacccag gtgacagtcg agtaccgcaa 120

tgagggtggt gccatggtcc ccatccgtgt ccacaccgtc ctcatctcca cccagcacga 180

cgagacagtg accaatgatg agatcgctgc tgacctgaag gagcatgtca tcaagcctgt 240

catccctgag cagtacttga cgagaagaca ttttccactt aaacccat 288

<210> 159
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 159

cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg tagagcgaga 60

agaaggcaat ggcggccgag agcttcnttt tcacntcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag gtgtcggacg ccgtgcttga cgcatgcctc gcgcaggacc 180

ccgacagcaa ggtggcntgc gagacntgca ccaagaccaa cntggtgatg gtgttcggcg 240

agatcacgac caaggcgacc gtggactacg agaagatcgt gcgcgacacc tgccgcgaga 300

tcgggttcac t 311

<210> 160
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 160

cggacgctgg ngcggtggcg ccttctccgg caaggacccc accaaggtgg accgcagcgg 60

cgcctaacgt ggccaggcag gccgccaaga gcatcgtggc cagcggcctc gcccgccgct 120

gcctcgtgca ggtgtcgtac gccatcggct gccggagccc ctgtccgtgt tcgtcaactc 180

gtacggcacc ggcacgatcc ccgacaagga gatcctcaag atcgtgaagg agaacttcga 240

cttcaggccc gggatgatca gcatcaa 267

<210> 161
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 161

agctgtcgac acattcctct tcacctcgga gtctgtgaac gagggacacc ctgacaagct 60

ctgtgaccag gtctcagatg ccgttcttga cgcttgcctt gctgaggacc ctgacagcaa 120

ggttgcttgt gagacctgca ccaagaccaa cattcancat ggtctttggt gagatcacca 180

ccaaggccaa tgttgactac gagaagattg tcagggagac ctgccgcaac attggttttg 240

tgtcaaacga tgttgggttg acgccgacca ctgcaaggtg ctcg 284

<210> 162
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 162

ccatcttcca cctcaacccg tccgggcgct tcgtcatcgg cgggccccac ggtgacgccg 60

gcctcaccgg ccgcaagatc atcatcgaca cgtacggcgg ctggggagcc cacggcggtg 120

gcgccttctc cggcaaggac cccaccaagg tggaccgcag cggcgcctac gtggccaggc 180

aggccgccaa gagcatcgtg gccagcggcc tcgcccgccg ctgcctcntg naggttt 237

<210> 163
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 163

acctgcgcct ggctgaggcc cgacggcaag acccaggtga cggtggagta cgtgaacgag 60

ggcggcgcca tggtgcccgt ccgcgtgcac accgtgctca tctccaccca gcacgacgag 120

accgtcacca acgacgagat cgccgccgac ctcaaggagc acgtcatcaa gcccgtgatc 180

cctgagaagt acctcgacga gaagaccatc ttccacctca acccgtccgg gcgctt 236

<210> 164
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 164

ggtggacctc acggcgatgc tggcctcact ggccgcaaga tcatcattga cacctacggt 60

ggctggggag cccatggtgg tggcgctttc tccggcaagg acccaaccaa ggttgaccgc 120

agcggagcct atgtcgcaag gcaggctgcc aagagcatcg tcgccagcgg ccttgctcgc 180

cgcgccatcg tccaggtgtc ttacgccatc ggntggcccg agcctctctc cgtgttcgtc 240

gacacgtacg gcaccggcgc gatccccgac aa 272

<210> 165
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 165

ccaagctagg tgctcgtctc accgaggncc gcaagaacgg aacctgcccc tggctcaggc 60

ctgatgggaa gacccaggtg acagtcgagt accgcaatga gggtggtgcc atggtcccca 120

tccgtgtcca caccgtcctc atctccaccc agcacgacga gacagtgacc aatgatgaga 180

tcgctgctga cctgaaggag catgtcatca agcctgtcat ccctgagcag taccttgacg 240

agaagaccat cttccacc 258

<210> 166
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 166

tctccctctt gccggtcccg aataaagagc agcagcgcaa gaggtcggta gagcgagaag 60

aaggcaatgg cggccgagag cttccttttc acctcggagt ccgtgaacga ggggcacccc 120

gacaagctgt gcgaccaggt gtcggacgcc gtgcttgacg catgcntcgc gcaggacccc 180

gacagcaagg tggcctgcga gacctgcacc aagaccaaca tggtgatggt gttcggcgag 240

atcacgacca aggcgaccgt ggactacgag aagatcgtgc gcgacacctg ccgcgaga 298

<210> 167
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 167

cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg tagagcgaga 60

agaaggcaat ggcggccgag agcttccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag gtgtcggacg ccgtgcttga cgcatgcctc gcgcaggacc 180

ccgacagcaa ggtggcctgc gagacctgca ccaagaccaa catggtgatg gtgttcggcg 240

agatcacgac caaggcgacc gtggactacg agaagatcnt gcgcgacacc tgccgcga 298

<210> 168
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 168

ccgaggtccg caagaacgga acctgcccct ggctcaggcc tgatgggaag acccaggtga 60

cagtcgagta ccgcaatgag ggtggtgcca tggtccccat ccgtgtccac accgtcctca 120

tctccaccca gcacgacgag acagtgacca atgatgagat cgctgctgac ctgaaggagc 180

atgtcatcaa gcctgtcatc cctgagcagt accttgacga gaagaccatc ttccacctta 240

acccatctgg ccgtttgtca ttggt 265

<210> 169
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 169

cccgacaagc tgtgcgacca ggtgtcggac gccgtgcttg acgcatgcct cgcgcaggac 60

cccgacagca aggtggcctg cgagacctgc accaagacca acatggtgat ggtgttcggc 120

gagatcacga ccaaggcgac cgtggactac gagaagatcg tgcgcgacac ctgccgcgag 180

atcgggttca cctccgacga cgtgggcctc gacgccgacc gctgcaagga ngctggtgaa 240

catcgagcag c 251

<210> 170
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 170

ctcttgccgg tcccgaataa agagcagcag cgcaagaggt cggtagagcg agaagaaggc 60

aatggcggcc gaganctcc ttttnanctc ggaatncgtg aacgaggggc ancccgacaa 120

gctgtgcgac caggtgtcgg acgccgtgct tgacgnatgc ctcgcgcagg accccgacag 180

caaggtggcc tgcgagacct gcaccaagac caacatggtg atggtgttcg gcgagatcac 240

gaccaaggcg accgtggact acgagaagat cgtgcgcnac acctgccgcg agatcgggtt 300

cactc 305

<210> 171
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 171

cntacggtgg ctggggagcc cacggcgggg gcgccttctc cggcaaggac ccgaccaagg 60

tggaccgcag cggggcctac gtcncgnggc aggctgccaa gagcatcgtc gccgccggcc 120

tcgcccgccg tgccatcgtc caggtctcct acnccatcgg cgtgccccgan cccctgtcgg 180

tgttcgtgga cacgtacggc accggcgcga tccccgacaa ggagatcctg aagatcgtga 240

aggagaactt cgacttcagg cccggca 267

<210> 172
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 172

ccaatgatga gatcgctgct gacctgaagg agcatgtcat caagcctgtc atccctgagc 60

agtaccttga cgagaagacc atcttccacc ttaacccatc tggccgcttt gtcattggtg 120

gacctcacgg cgatgctggc ctcactggcc gcaagatcat cattgacacc tacggtggct 180

ggggagccca tggtggtggc gctttctccg gcaaggaccc aaccaaggtt gaccgcagcg 240

ganctatgtc 250

<210> 173
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 173

ctcctccctc ctgccgggtc cttaataaag agcagcagcg caagangttg gtagancgag 60

cgagaagaag gcaatggcgg cggagagctt cctgttcacc tcggagtccg tgaacgaggg 120

gcacccagac aagctgtgcg accaggtgtc ggacgcggtg ctggacgcct gcctggcgca 180

ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag acgaacatgg tgatggtgtt 240

cggcgagatc accaccaagg cgagcgtgga ctacgagaag atcgtgcgcg acacctgccg 300

cgag 304

<210> 174
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 174

catccgtttg cctcttctcc ctcttgccgg tcccgaataa agagcagcag cgcaagaggt 60

cggtagagcg agaagaaggc aatggcggcc gagagcttcc ttttcacctc ggagtccgtg 120

aacgangggc accccgacaa gctgtgcgaa ccaggtgtcg gacgccgtgc ttgacgcatg 180

cctcgcgcag gaccccgaca gcaangtggc ctgcgagacc tgcaccaaga ccaacatggt 240

gatggtgttc ggcgagatca cgaccaaggc gaccgtggac tacgagaaga tcgtgcgcga 300

cacctgccgc gagatcgggt tcactccg 328

<210> 175
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 175

tctccctctt gccggtcccg aataaagagc agcagcgcaa gaggtcggta gagcgagaag 60

aaggcaatgg cggccgagag cttccttttc acctcggagt ccgtgaacga ggggcacccc 120

gaacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg cgcaggaccc 180

cgacagcaag gtggcctgcg agacctgcac caagaccaac atggtgatgg tgttcggcga 240

gatcacgacc aaggcgaccg tggactacga gaagatcgtg cgcgacacct gccgcga 297

<210> 176
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 176

agatgccgtt cttgacgctt gccttgctga ggaccctgac agcaaggttg cttgtgagac 60

ctgcaccaag accaacatgg tcatggtctt tggtgagatc accaccaagg ccaatgttga 120

ctacgagaag attgtcaggg agacctgccg caacattggt tttgtgtcaa acgatgttgg 180

gcttgacgcc gaccactgca aggtgctcgt gaacattgag cagcagtccc ctgatatgct 240

cagggtgtgc atggccattc accaagcgcc ccgag 275

<210> 177
<211> 534
<212> nucleic acid
<213> Zea mays

<400> 177

gaggnagctt tnannggggn ttaagggnat ttttaaaccc tnntttgnat tcccgggtcg 60

acccacgcgt ccgcttgccg gtcccgaata aagagcagcn ncgcaagagg tcggtagagc 120

gagaagaagg caatggcggc cgagagcttc cttttcacct cggagtccgt gaacgagggg 180

caccccgaca agctgtgcga ccaggtgtcg gacgccgtgc ttgacgcatg cctcgcgcag 240

gaccccgaca gcaaggtggc ctgcgagacc tgcaccaaga ccaacatggt gatggtgttc 300

ggcgagatca cgaccaaggc gaccgtggac tacgagaaga tcgtgcgcga caccttnccg 360

cgagatcggg ttcacctttc gacgacntgg gccttgacgc ccacccggtt caaggtgctt 420

gtgnacattg agcaagaatt ccccgaaatt gngcaaggcg ttcaccggca ctttacgaac 480

cggcccnagg aagatcggnc cggccnacca nggncaattt tttgggtccc cccc 534

<210> 178
<211> 248
<212> nucleic acid

<213> Zea mays

<400> 178

gatgcccctc agccatgtcc ttgccaccaa gcttggtgct cgtctcacgg aggttcgcaa 60

gaatggaacc tgcccctggc tcaggcccga tgggaagacc caggtgacag tggagtaccg 120

caacgagggt ggcgccatgg ttcccatccg tgtgcacaca gtcctcatct ctacccagca 180

cgacgagaca gtcaccaacg acgagattgc tgctgacctg aaggagcacg tcatcaagcc 240

agtcatcc 248

<210> 179
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 179

ctcctccctc ctgccgggtc cttaataaag agcagcagcg caagaggttg gtagagcgag 60

cgagaagaag gcaatggcgg cggagagcnt cctgttcacc tcggagtccg tgaacgaggg 120

gnacccagac aagctgtgcg accaggtgtc ggacgcggtg ctggacgcct gcctggcgca 180

ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag acgaacatgg tgatggtgtt 240

cggcgagatc accaccaagg cgagcgtgga ctacgagaag atcgtgcgcg acacctgccg 300

cg 302

<210> 180
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 180

angtctccta cgccatcggc gtggcccgan cccctgtcgg tgttcgtgga cacgtacggc 60

accggcgcga tccccgacaa ggagatcctg aagatcgtga aggagaactt cgacttcagg 120

cccggcatga tcatcatcaa cctcgacctc aagaaaggcg gcaacgggcg ctacctcaag 180

acggcggcct acgggcactt tgggagggac gaccccgact tcacctggga aggtggtgaa 240

gcccctcaag gcggagaagc cgtcttctgc atgaggcgcn t 281

<210> 181

<211> 269
<212> nucleic acid
<213> Zea mays

<400> 181

gacacattcc tcttcacctc ggagtctgtg aacgagggac accctgnana agctctgtga 60

ccaggtctca gatgccgttc ttgacgcttg ccttgctgag gaccctgaca gcaaggttgc 120

ttgtgagacc tgcaccaaga ccaacatggt catggtcttt ggtgagatca ccaccaaggc 180

caatgttgac gccgagaaga ttgtcaggga gacctgccgc aacattggtt ttgtgtcaaa 240

cgatgttggg cttgacgcng accatgcaa 269

<210> 182
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 182

ccctcttgcc ggtcccgaat aaagagcagc agcgcaagag gtcggtagag cgagaagaag 60

gcaatggcgg ccgagagctt ccttttcacc tcggaanccg tgaacgaggg gcacccccgac 120

aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca ggacccccgac 180

agcaaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt cggcgagatc 240

acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg acacct 286

<210> 183
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 183

gcgcgacacc tgccgcgaga tcgggttcac ctccgacgac gtgggcctcg acgccgaccg 60

ctgcaaggtg ctggtgaaca tcgagcagca gtcccccgac atcgcgcagg gcgtgcacgg 120

gcacttcacg aagcggcccg aggagatcgg cgcgggcgac cagggccaca tgttcgggta 180

cgncaccgac gagacccccg agctgatgcc gctgagccac gtggtggcca ccaagctggg 240

<210> 184
<211> 250
<212> nucleic acid

<213> Zea mays

<400> 184

cctgagcagt accttgacga gaagaccatc ttccacctta acccatctgg ccgctttgtc 60

attggtggac ctcacggcga tgctggcctc actggccgca agatcatcat tgacacctac 120

ngtggctggg gagcccatgg tggtggcgct ttctccggca aggacccaac caaggttgac 180

cgcagcggag cctatgtcgc aaggcaggct gccaagagca tcgtcgccag cggccttgct 240

cgccgcgcca 250

<210> 185
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 185

gcctcttctc ctccctcctg ccgggtcctt aataaagagc agcagcgcaa gaggttggta 60

gagcgagcga gaagaaggca atggcggcgg agagcttcct gttcacctcg gagtccgtga 120

acgaggggca cccagacaag ctgtgcgacc aggtgtcgga cgcggtgctg gacgcctgcc 180

tggcgcagga ccccgacagc aaggtggcct gcgagacctg caccaagacg aacatggtga 240

tggtgttcgg cgagatcacc accaaggcga gcgtggacta cgagaagatc gtgcgcgaca 300

cctgc 305

<210> 186
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 186

cgacagcaga ggnggcnngc gagacctgca ccaagaccaa catggtgatg ttgttcggcg 60

agatcacgac caaggcganc gtggactacg agaagatcgt gcgcgacacc tgatcgcgag 120

atcgggttca cctcccgacg acgtgggcct cgacgccgac cgctgcnagg ngctggtgaa 180

natcgagcan cagtcncccg acatcgcgca ngcntgcacg ggcacttcac naagcgnccc 240

gangagatcg ncgcggncta ccatnggcac atgttcgggt acncnaccna nnagacnnnc 300

gagct 305

<210> 187
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 187

cettgccacc aagcttggtg ctcgtctcac ggaggttcgc aagantggaa cctgcccctg 60

gctcaggccc gntgggaaga cccaggtgac agtggagtac cgcaacgagg gtggcgccat 120

ggttcccatc cgtgtgcaca cagtcctcat ctctacccag cacgacgaga cagtcancaa 180

cgacgagatt gctgctgacc tgaaggagca cgtcatcaag ccagtcatcc ccgagnagnn 240

acctcgacga gaagacaatc ttccacanac tnna 274

<210> 188
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 188

agcacgtcat caagccagtc atccccgagc agtacctcga cgagaagaca atcttccacc 60

tcaacccgtc tggccgcttc gtcatcggcg gacctcacgg cgacgctggc ctcactggcc 120

ggaagatcat catcgacacc tacggtggct ggggagccca cggcgggggc gccttctccg 180

gcaaggaccc gaccaaggtg gaccgcagcg gggcctacgt cgcgaggcag gc 232

<210> 189
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 189

gcccctcagc catgtccttg ccaccaagct tggtgctcgt ctcacagagg ttcgcaagaa 60

tggaacctgc ccctggctca ggcccgatgg gaagacccag gtgacagtgg agtaccgcaa 120

cgagggtggc gccatggttc ccatccgtgt gcacacagtc ctcatctcta cccagcacga 180

cgagacagtc accaacgacg agattgctgc tgacctgaag gagcacgtca tcaagccagt 240

cat 243

<210> 190

<211> 290
<212> nucleic acid
<213> Zea mays

<400> 190

ccctcttgcc ggtcccgaat aaagancagc agcgcaagag gtcggtagag cnagaagaan 60

gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgaggg gcacccccgac 120

aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca ggacccccgac 180

ancnaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt cggcnagatc 240

acgaccaagg cgaccgtgga ctacnagaag atcgtgcgcg acacctgccg 290

<210> 191
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 191

gncacattcc ncttcacctc ggngtctgtg ancgagggac accctgacna gctctgtgac 60

caggtctcag atgccgttct tgacgcttgc cttgctgagg ancctgacag caaggttgct 120

tgtgagacct gcaccaagac caacatggtc atggtctttg gtgagatcac caccaaggcc 180

aatgttgact acgagangat tgtcagggag acctgccgca acattggttt tgtgtcaaac 240

gatgttgggc tgacgccgac cactgc 266

<210> 192
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 192

gtgccatggt ccccatccgt gtccacaccg tcctcatctc cacccagcac gacgagacag 60

tgaccaatga tgagatcgct gctganctga aggagcatgt catcaagcct gtcatccctg 120

agcagtacct tgacgagaag accatcttcc acttaaccca tctgcccgct ttgtcattgg 180

tggacctcac ggcgatgctg gcctcactgg ccgcaagatc atcattgaca ctacggtggc 240

tggggagccn atgntgtggc gtttncnggg aaggcc 276

<210> 193

<211> 292
<212> nucleic acid
<213> Zea mays

<400> 193

anggtggctg gggagcccat ggtggtggcg ctttctccgg caaggaccca accaaggttg 60

acngcagcgg agcctatgtn cgcaaggcag gctgccaaga gcatcgtcgc cagcggcctt 120

gctcgccgcg ccatcgtcca ggtgtcttac gccatcggcg tgcccgagcc tctctccgtg 180

ttcgtcgaca cgtacggcac cggcgcgatc cccgacaagg agatcctcaa gattgtcaag 240

gagaattcga tttcaggcct ggcatgatct catcaacctt gactcaagaa gg 292

<210> 194
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 194

ctacgagaag atcgtgcgcg acacctgccg cgagatcggg ttcacctccg acgacgtggg 60

cctcgacgcc gaccgctgca aggtgctggt gaacatcgag cagcagtccc ccgacatcgc 120

gcagggcgtg cacgggcact tcacgaagcg gcccgaggag atcggcgcgg gcgaccaggg 180

ccacatgttc gggtacgcca ccgacgagac ncccgagctg atgcng 226

<210> 195
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 195

cttcnccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggncgg tagagcgaga 60

agaaggcaat ggcggccgag agcttccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag gtgtcggacg ccgtgcttga cgcatgcctc gngcaggacc 180

ccgacagcaa ggtggcctgc gagacctgca ccaagaccaa catggtgatt gtgttcggcg 240

agatcacgac canggcgacc gtggactacg agaagatcgt gcgcnacac 289

<210> 196
<211> 300
<212> nucleic acid

<213> Zea mays

<400> 196

cgcctcttct cctccctcct gccgggtcct taataaagag cagcagcgca agnggttggt 60

agagcgagcg agaagaaggc aatggcggcg gagagcttcc tgttcacctc ggagtccgtg 120

aacgaggggc acccagacaa gctgtgcgac caggtgtcgg acgcggtgct ggacgcctgc 180

ctggcgcagg accccgacag caaggtggcc tgcgagacct gcaccaagac gaacatggtg 240

atggtgttcg gcgagatcac caccaaggcg agcgtggact acgagaagat cgtgcgcgac 300

<210> 197
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 197

ccctcttgnc ggtcccgaat aaagagcagc agcgcaagag gtcgntagag cgagaagaag 60

gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgaggg gcaccccgac 120

aagctgtgcg accaggtgtc ggacgccgtn cttgangcat gcctcgcgca ggaccccgac 180

agcaaggtgg cctgcgagac ctgnaccaag acnaacatgg tgatggtgtt cggcgagatc 240

acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg acac 284

<210> 198
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 198

gtcccgaata aagagcagca gcgcaagang tcggtagagc ganaanaang caatggcggc 60

naagagcttc cttttcacct cggagtccgt gaacgagggg cancccgaac aagctgtncg 120

accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca ggaccccgac agcaaggtgg 180

cctgcgagac ctgcaccaag accaacatng tgatggtgtt cggcgagatc acgaccaang 240

cgaccgtgga ctacgagaag atcgtgcgcg acacctgccg cg 282

<210> 199
<211> 292
<212> nucleic acid

<213> Zea mays

<400> 199

acgccatcgg ntgccgganc ccctgtccgt gttcgtcaac tcgtacggca ccggcacgat 60

ccccgacaag gagatcctca agatcgtgaa ggagaacttc gacttcaggc ccgggatgat 120

cagcatcaac ctcgacctga agaagggcgg caacaggttc atcaagaccg ncgcctacgg 180

ccacttcggc cgtgacgacg ccgacttcac ctgggaggtg gtgaagcccc tcaagttcga 240

caaggcatcg gcttaaggtt gggantgtca tgtggacatg angatacntc ct 292

<210> 200
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 200

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

angggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggcctgcg agacctgcac caagaccaac atggtgatgg 240

tgttcggcga gatcacgacc aaggcgaccg tggactacga gaagatcgtg g 291

<210> 201
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 201

gtnttacgcn atcngcaggc ccnagnntct ctncgtgttc gtcgacacgt anggcancgg 60

cgngatnncn ganaaggaga tcctcaagat tgtnaaggng aactnngatt tcaggcctgg 120

catgatcatc atcaaccttg acctcaagan aggcggnaac gggcgctacc tcaagacggc 180

ggattanggc cactttggaa gggangaccc tgacttcacc tgggatgtgg tnaagccact 240

caantcggag aaacctnctg cctaaggcgg ntttnttttc agtaagaagc ttttggtggt 300

ctgctgtgct taatcatgcn ttatatggct tctacac 337

<210> 202

<211> 279
<212> nucleic acid
<213> Zea mays

<400> 202

cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg tagagcgaga 60

agaaggcaat ggcggccgag agcttccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag gtgtcggacg ccgtgcttga cgcatgcctc gcgcaggacc 180

ccgacagcaa ggtggcctgc gagacctgca ccaagaccaa catggtgatg gtgttcggcg 240

agatcacgac caaggcgacc gtggactacg agaagatcg 279

<210> 203
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 203

aaantcacgg gtcgacncac gcgtcnnnac ngactnntac taacgcgtgg gcggacgcgt 60

gggggganggt gtggacacgg ntggggacca tggcagcacc ctcattgcgg taatcgactg 120

tcacccctga gcagtacctt gacgagaaga ccatcttcca ccttaaccca tctggccgct 180

ttgtcattgg tggacctcac ggcgatgctg gcctcactgg ccgcaagatc atcattgaca 240

cctacggtgg ctggggagcc catggtggtg gcgctttctc cggcaaggac ccaaccaagg 300

ttgaccgcag cggagcctat gtcgcaaggc angctgcnaa gagcatcgtc gccagcgggc 360

cttgctcgnc cgngccatcg tccaaggtgt ncttaagcca atcggcntgc ccganccctnt 420

ctccgntttt cgtcnaaang tta 443

<210> 204
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 204

tgcctcttct ccctcttgcc ggtcccgaat aaagagcagc agcgcaagag gtcggtagag 60

cgagaagaag gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgangg 120

gcaccccgac aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca 180

ggancccgac agcaaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt 240

cggcgagatc acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg 290

<210> 205
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 205

cgcctcntcn ccncccnccn gccgggtcct taataaagag cagcagcgca agangttggt 60

agagcgagcg agaaagaagg catggcggcg gagagcttcc tgttcacntc ggagtccgtg 120

aacgaggggc acccagacaa gctgtgcgac caggtgtcgg acgcggtgct ggacncctgc 180

ctggcgcagg accccgacag caaggtggcc tgcgagaccn gcaccaagac gaacatggtg 240

atggtgttcg gcgagatcac caccaaggcg agcgtggacn acgagaagat cgtgcgcgac 300

acct 304

<210> 206
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 206

ctcttctcct ccctcctgcc gtttccttaa taaagagcag cagcgcaaga ggttggtaga 60

gcgagcgaga agaaggcaat ggcggcggag agcttcctgt tcacctcgga gtccgtgaac 120

gaggggcacc cagacaagct gtgcgaccag gtgtcggacg cggtgctgga cgcctgcctg 180

gcgcaggacc ccgacagcaa ggtggcctgc gagacctgca ccaagacgaa catggtgatg 240

gtgttcggcg agatcaccac caaggcgagc gtngactacg agaagatcgt 290

<210> 207
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 207

gatcaccacc aaggccaatg ttgactacga gaagattgtc agggagacct gccgcaacat 60

tggttttgtg tcaaacgatg ttgggcttga cgccgaccac tgcaaggtgc tcgtgaacat 120

tgagcagcag tcccctgata ttgctcaggg tgtgcatggc cacttcacca agcgccccga 180

ggagattgga gctggtgacc agngacacat gttcgggtat gcgaccgatg agaccctgag 240

ttgatgc 247

<210> 208
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 208

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcntttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cganagcaag gtggcctgcg agacctgcac caagaccaac atggtgatgg 240

tgttcggcga gatcacgacc aaggcgaccg tggactacga gaagatcgtg c 291

<210> 209
<211> 428
<212> nucleic acid
<213> Zea mays

<400> 209

cggacgcttg ggctttcgcg tggggtcgac acgtacgggn ccggggggat cnccgacaag 60

gagatcctca agattgtcaa ggagaacttt tatttcaggc ctggcatgat catcatcaac 120

cttgacctca agaaaggcgg caacgggcgc tacctcaaga cggcggncta cggccacttt 180

ggaagggacg accctgactt cacctgggag gtggtgaagc cactcaagtc ggagaaacct 240

tctgcctaag gcggcctttt ttttcagtaa gaagcttttg gtggtctngc tgtgcttaat 300

catgctttta tatggcttct acatgttgga ggntctttct tgatctgcac cgggcttatc 360

gnttgtgttg nactgcccta ataagtggtg cttatgagga ctggttctgg ttttgctgct 420

tatgtngt 428

<210> 210
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 210

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gcgagaagaa ggcaatggcg gcggagagct tcctgttcac ctcggagtcc gtgaacgagg 120

ggcacccaga caagctgtgc gaccaggtgt cggacgcggt gctggacgcc tgcctggcgc 180

aggaccccga cagcaaggtg gcctgcgaga cctgcaccaa gacgaacatg gtgatggtgt 240

tcggngagat caccaccaag gcgagcgtgg actacgagan gntcgtgcnc gacac 295

<210> 211
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 211

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gtatgcgacc gatgagaccc ctgagttgnt gcccctcagc catgtccttg ccaccaagct 120

aggtgctcgt ctcactgagg tccgcaagaa cggaacctgc ccctggctca ggcctgatgg 180

gaagacccnn gtgacagtcg agtaccgcaa tgagggtggt gcnatggtcc cngnnngtgt 240

ccanaccgtc ctcattt 257

<210> 212
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 212

ctcggatccg cccgaccacg accaccccgc gtcgccgccg cgcagaagca gcagatcaga 60

gaagatggcc ggactcgaca ccttcctctt cacctcggag tccgtgaacg agggacaccc 120

tgacaagctc tgcgaccagg tctcagatgc tgttctggac gcttgccttg ctgaggaccc 180

tgacagcaag gttgcttgcg agacctgcac caagaccaac atggtcatgg tctttggtga 240

gatcaccacc aaggcaatgt cgactagaga agattgtcag ggagacat 288

<210> 213
<211> 467
<212> nucleic acid
<213> Zea mays

<400>   213

ttnnnnttcc ttnggccccn aaaggtaaaa ggactcccgg gtcgacccac gcgtcagcca   60

cgcgtccgcc cacgcgtccg cccacgcgtc cgcccacgcg tccgcccacg cgtccgcccc 120

ctcctgccgg gtccttaata aagagcagca gcgcaaggtg agccgccagc ttgccccggt 180

tggtagagcg agcganaaga angcaatggc ggcgganagc ttcctgttca cctcgggtcc 240

gtgaacgagg ggcacccaga caagctgtgc gaccaggtgt cggacgcggt gctggcgcct 300

gcctggcgca ggaccccgac agcaaggtgg cctgcgagac ctgcaccaag acgacatggt 360

gatggtgttc ggcgagatna ccaccaaggc gagcgtggac tacgaaaaag atntgcgcga 420

aaactggccg ccaagatcgg gttcacctcc gacgacgtgg ggctcga   467

<210>   214
<211>   287
<212>   nucleic acid
<213>   Zea mays

<400>   214

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gtagagcgag aagaaggcaa tggcggccga gagcttcctt ttcacctcgg agtccgtgaa 120

cgaggggcac cccgacaagc tgtgcgacca ggtgtcggac gccgtgcttg acgcatgcct 180

cgcgcaggac cccgacagca aggtggcctg cgagacctgc accaagacca acatggtgat 240

ggtgttcggc gagatcacga ccaaggcgat cgtggactac gagaaga   287

<210>   215
<211>   294
<212>   nucleic acid
<213>   Zea mays

<400>   215

ctcttctcct ccctcctgnn gggtccttaa taaagagcag cagcgcaaga ngttggtaga   60

gcgancgana agaaggcaat ggcggcggag agcttcctgt tcanctcgga gtccgtgaac 120

gaggggcacc cagacaagct gtgcgaccag gtgtcggacg cggtgctgga cgcctgcctg 180

gcgcaggacc ccgacagcaa ggtggcctgc gagacctgca ccaagacgaa catggtgatg 240

gtgttcggcg agatcaccac caaggcgagc gtggactacn agaagatcgt gcgc   294

<210> 216
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 216

cggaacctgc ccctggctca ggcctgatgg gaagacccag gtgacagtcg agtaccgcaa 60

tgagggtggt gccatggtcc ccatccgtgt ccacaccgtc ctcatctcca cccagcacga 120

cgagacagtg accaatgatg agatcgctgc tgacctgaag gagcatgtca tcaagcctgt 180

catccctgag cagtaccttg acgagaagac catcttccac cttaaccc 228

<210> 217
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 217

cggcccactt caccaagcgc ccantaggag attggagctn gtgaccaggg gcacatgtan 60

gggtatgcga ctgacgagac ccctgagctg atgcccctca gccatgtcct tgccaccaag 120

cttggtgctc gtccacggag gttcgcaaga atggaacctg cccctggctc aggcccgatg 180

ggaagaccca ggtgacagtg gagtaccgca agagggtggc gccatggttc ccatccgtgt 240

gcacacagtc ctcatctcta cccagcag 268

<210> 218
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 218

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catggtnatg gtnttcggcg agatcacgac caaggctacc gtgggactac gagaagatcg 120

tgcgctacac ctgncgcgag atcnggttca cctccgacga cgtgggcctc gacgcctacc 180

gctncaaggt gctggtgaac atctagcagc agtcccccga catnncgcag ggcgtgcacg 240

ggcattcnng aagcggcccg agg 263

<210> 219

<211> 256
<212> nucleic acid
<213> Zea mays

<400> 219

gagcccacgg cgggggcgcc ttctccggca aggacccgac caaggtggac cgcagcgggg 60

cctacgtcgc gaggcaggct gccaagagca tcgtcgccgc cggcctcgcc cgccgcgcca 120

ttgtccaggt ctcctacgcc atcgggtgcc cganccccctt tcggtgttcg tggacacgta 180

cggcaccggc gcgatccccg acaaggagat cctgaagatc gtgaaggaga attcgacttc 240

aggcccggca tgatca 256

<210> 220
<211> 334
<212> nucleic acid
<213> Zea mays

<400> 220

anngccggag cccctgtccg tgttcgtcaa ctcgtacggc accggcacga tccccgacaa 60

ggagatcctc aagatcgtga aggagaactt cgacttcagg cccgggatga tcagcatcaa 120

cctcgacctg aagaagggcg gcaacaggtt catcaagacc gccgcctacg gccattcggc 180

cgtgacgacg ccgacttcac ctgggaggtg gtgaagcccc tcaagttcga caaggcatcg 240

gcttaaggtt nggatgtcac tgtggacatg aggactactt cctctggctc tgctgttacc 300

tgcaagcatt gtgctgtgga tgtgtgtgtt tgat 334

<210> 221
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 221

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ccccnncanc nnggtggcct gcgagacctg caccaagacc aacatngtga tggtgttcgg 120

cgagatcacg ancaaggcga ccgtggacta cgagnngatc gtncgcgaca cctgccgcga 180

gatcgggttc aatccganga ngtgggcctc nacgccgnnc gctgcnaggt gctggtgaac 240

ntcgagcagc agtcc 255

<210> 222
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 222

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tcatcaagcc tgtcatccct gagcagtacc ttgacgagaa gaccatcttc caccttaacc 120

catctggccg ctttgtcatt ggtggacctc acggcgatgc tggcctcact ggccgcaaga 180

tcatcattga cacctacggt ggctggggag cccatggtgg tg 222

<210> 223
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 223

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aggcaatggc ggccgagagc ttccttttca cctcggagtc cgtgaacgag gggcaccccg 120

acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc atgcctcgcg caggaccccg 180

acagcaaggt ggcctgcgag acctgcacca agaccaacat ggtgatggtg ttcggcgaga 240

tcacgaccaa ggcgaccgtg gactacgag 269

<210> 224
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 224

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ggttgggaga gcgagcgaga agaaggcaat ggcggcggag agcttcctgt tcacctctga 120

gtccgtgaac gangggcanc cagacaagct gtgcgaccag gtgtcggacg ctgtgctgga 180

ctcctgcctg gcgcaggacc ccgacagcaa agtggcctgc gagacctgca ccaagacgaa 240

catggtgatg gtgttcggcg agatcancan caangcgagc gtggactacg agaagatngt 300

gcgcgacacc t 311

<210> 225
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 225

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aaggagaact tcgacttcag gcccgggatg atcagcatca acctcgacct gaagaagggc 120

ggcaacaggt tcatcaagac cgccgcctac ggccacttcg gccgtgacga cgccgacttc 180

acctgggagg tggtgaagcc cctcaagttc gacaaggcat cggcttaagg ttgggagtgt 240

cactgtggac atgaggacta ccttcctctg gctctgctgt tacctgcaag cat 293

<210> 226
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 226

gccggagccc ctgtccgtgt tcgtcaactc gtacggcacc ggcacgatcc ccgacaagga 60

gatcctcaag atcgtgaagg agaacttcga cttcaggccc gggatgatca gcatcaacct 120

cgacctgaag aagggcggca acaggttcat caagaccgcc gcctacggcc acttcggccg 180

tgacgacgcc gacttcacct gggaggtggt gaagcccctc aagtt 225

<210> 227
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 227

cacctcaacc cgtctggccg cttcgtcatc ggcggacctc acggcgacgc tggcctcact 60

ggccggaaga tcatcatcga cacctacggt ggctggggag cccacggcgg gggcgccttc 120

tccggcaagg acccgaccaa ggtggaccgc agcggggcct acgtcgcgag gcaggctgcc 180

aagagcatcg tcgccgccgg cctcgcccgc ngtgccatcg tcaagtnttc naaggcatcg 240

ggttgcccga anccct 256

<210> 228

<211> 281
<212> nucleic acid
<213> Zea mays

<400> 228

tcatcattga cacctacngt ggctggggag cccatggtgg tggcgctttc tccggcaaga 60

nacccaacca aggttgaccg cagcggagcc tatgtcgcaa ggcaggctgc caagagcatc 120

gtcgccagcg gccttgctcg ccgcgccatc gtccaggtgt cttacgccat cggntgcccg 180

agcctctctc cgtgttcgtc gacacgtacg gcaccggcgc gatccccgac aaggagatct 240

caagattgtc aaggagaatt cgatttcagg ctggcatgat c 281

<210> 229
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 229

ctccgcctcg accggatctc gtcggactcg gatccgcccg accaccccgc gccgccgcag 60

atccagagaa gatggcagct gtcgacacat tcctcttcac ctcggagtct gtgaacgagg 120

gacaccctga caagctctgt gaccaggtct cagatccgtt cttgacgctt gccttgctga 180

ggaccctgac agcaaggttg cttgtgagac ctgcaccaag accaacatgg tcatggtctt 240

tggtgagatc accaccaagg ccaatgttga ctacgagaag attgtcaggg 290

<210> 230
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 230

ctntctccct ctttgccggt cccgaataaa gagcagcagc gcaagaggtc ggtagagcga 60

gaagaaggca atggcggccg agagcttcct tttcacctcg gagtccgtga aacgaggggc 120

accccgaaca agctgtgcga ccangtgtcg gacgccgtgc tttgacgcat gnctcncgca 180

ngagnccgac agcaangtgg cctgcgagac ctgcaccaag ancaacatgg tgatggtgtt 240

cggcgagatc acgaccaagg cgaccgtgga ctacgagaag atcgtgcgcg acacctgccg 300

cgagatcggg ttcactcc 318

<210> 231
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 231

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accaaggttg accgcagcgg agcctatgtc gcaaggcagg ctgccaagag catcgtcgcc 120

agcggccttg ctcgccgcgc catcgtccag gtgtcttacg ccatcggntg cccgagcctc 180

tctccgtgtt cgtcgacacg tacggcaccg gcgcgatccc cgacaaggag atcctcaaga 240

tgtcaaggag aattcgattt cangctggca tgatca 276

<210> 232
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 232

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gagcccatgg tggtggcgct ttctccggca aggacccaac caaggttgac cgcagcggag 120

cctatgtcgc aaggcaggct gccaagagca tcgtcgccag cggccttgct cgccgcgcca 180

tcgtccaggt gtcttacgcc atcgggtgcc cgagcctctc tccgtgttcg tcgacacgta 240

cggc 244

<210> 233
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 233

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tggtttgtgt caaaacgatg ttgggcttga cgccgaccac tgcaaggtgc tcgtgaacat 120

tgagcagcag tcccctgata ttgctcaggg tgtgcatggc cacttcacca agcgccccga 180

ggagattgga gctggtgacc agggacacat gttcgggtat gcgaccgatg agaccctgag 240

ttgatgccct caagccatgt cttgccacca gctagtgctc gtctcacgag gccgcaaaan 300

ggactgnccn ggnnaanctg atggagacca gtganatcga gtacncatt 349

<210> 234
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 234

cggcgatgct ggcctcactg gccgcaagat catcattgac acctacggtg gctggggagc 60

ccatggtggt ggcgctttct ccggcaagga cccaaccaag gttgaccgca gcggagccta 120

tgtcgcaagg caggctgcca agagcatcgt cgccagcggc cttgctcgcc gcgccatcgt 180

ccaggtgtct tacgccatcg gcgtgcccga gcctctctcc gtgttcgt 228

<210> 235
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 235

cctgacagca aggttgcttg cgagacctgc accaagacca acatggtcat ggtctttggt 60

gagatcacca ccaaggccaa tgtcgactac gagaagattg tcagggagac atgccgcaac 120

atncgtttcg tgtcgaacga tgtcgggctt gacgctgacc actgcaaggt gcttgtnaac 180

attnagcagc agtcccctga tattgctcag ggtgtgcagg ccattcacna agccccccga 240

ggagntngag tgtgaccagg gga 263

<210> 236
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 236

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ggcancccga caagctgtgc gaccaggtgt cggacgccgt gcttgacgca tgcctcgcgc 120

aggaccccga cagcaaggtg gcctgcgaga cctgcaccaa gaccaacatg gtgatggtgt 180

tcggcgagat cacgaccaag gcgaccgtgg actacgaga 219

<210> 237

<211> 301
<212> nucleic acid
<213> Zea mays

<400> 237

cgttcgcctc ttctcctccc tcctgccggg tccttaataa agagcagcag cgcaagaggt 60

tggtagagcg agcgagaaga aggcaatggc ggcggagagc ttcctgttca cctcggagtc 120

cgtgaacgag gggcacccag acaagctgtg cgaccaggtg tcggacgcgg tgctggacgc 180

ctgcctggcg caggaccccg acagcaaggt ggcctgcgag acctgcacca agacgaacat 240

ggtgatggtg ttcggcgaga tnaacaacaa aggcgagcgt ggactacgag aagatggtgc 300

g 301

<210> 238
<211> 439
<212> nucleic acid
<213> Zea mays

<400> 238

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atctcatccc aactccgcct cgaccggatc tcgtcggact cggatccgcc cgaccacccc 120

gcgccgccgc agatcaaaga agatggcagc tgtcgacaca ttcctcttca cctcggagtc 180

tgtgaacgag ggacaccctg acaagctctg tgaccaggtc tcagatgccg ttcttgacgc 240

ttgccttgct gaggaccctg acagcaaggt tgcttgtgag acctgcacca agaccaacat 300

gggcatggnc tttggtgaga tcaccaccaa ggccaatggt gactaccaag aagattgtca 360

gggagnacct gccgnaacat tnggtttggg gtcaaacgat gttggcttga cgccaaccac 420

tggaaggggc tcgtnaant 439

<210> 239
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 239

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tcctcatctc cacccagcac gacgagacag tgaccaatga tgagatcgct gctgacctga 120

aggagcatgt catcaagcct gtcatccctg agcagtacct tgacgagaag accatcttcc 180

accttaaccc atctggccgc nttgtcattg gtggactcac ggcgatgtgg cctcactgg 239

<210> 240
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 240

gtcagggaga catgccgcaa cattggtttc gtgtcgaacg atgtcgggct tgacgctgac 60

cactgcaagg tgcttgtgaa cattgagcag cagtcccctg atattgctca gggtgtgcac 120

ggccacttca ccaagcgccc cgaggagatt ggagctggtg accaggggca catgtttngg 180

tatncnantt acnngacacc tgagctgatg cccctcagcc atgt 224

<210> 241
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 241

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aagatggccg gactcgacac cttcctcttc acctcggagt ccgtgaacga gggacaccct 120

gacaagctct gcgaccaggt ctcagatgct gttctggacg cttgccttgc tgaggaccct 180

gacagcaagg ttgcttgcga gacctgcacc aagaccaaca tggtcatggt ctttggtgag 240

atcaccacca aggccaatgt cgatacgaga agat 274

<210> 242
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 242

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ccctgacagc aaggttgctt gcnagacntg caccaagacc aacatggnca nggtctttgg 120

tgagatcacc accaaggcca angtcgacta cgaggagatt gtcagggaga catgccgcaa 180

cattggtntc gtgtcgaacg atgtcgggct tgacgctgac cactgcaagg tg 232

<210> 243
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 243

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agaaggcaat ggcggccgag agcntccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag gtgtcggacg ccgtgcttga cgcatgcctc gcgcaggacc 180

ccgacagcaa ggtggcctgc gagacctgca ccaagaccaa catggtgatg gtgttcggcg 240

agatcacgac caaggcgacc gtggact 267

<210> 244
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 244

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ccagcttgcc ccaggttggt agagcgagcg agaagaaggc aatggcggcg gagagcttcc 120

tgttcacatc ggagtccgtg aacgaggggc acccagacaa gctgtgcgac caggtgtcgg 180

acgcggtgct ggacgcctgc ntggcgcagg accccgacag caaggtggcc tgcgagaccn 240

gcaccaagac gaacatggtg atggtgttcg gcgagatcac caccaaggcg agcgtggaca 300

acgagaaga 309

<210> 245
<211> 347
<212> nucleic acid
<213> Zea mays

<400> 245

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caaagaagat ggcagctgtc gacacattcc tcttcacctc ggagtctgtg aacgagggac 120

accctgacaa gctctgtgac caggtctcag atgccgttct tgacgcttgc cttgctgagg 180

accctgacag caaggttgct tgtgagacct gnaccaagac caacatggtc atggtctttg 240

gtgagatcac caccaaggcc attgtgacta cgagaagatt gtccagggag acttgccgca 300

acattggttt gtgtcaaacg atgttgggnt gacgccacac tgcaaag 347

<210> 246
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 246

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tgangctgac cactgcaagg tgcttgtgaa cattgnnnca gcagtcccct natattgctc 120

agngtgtgca cggccacttc accaagcgcc ccgaggagat tggagctggt gaccaggggc 180

acatgtttgg gtatgcnact gacgagaccc ctgagctgat gcccctcagc catgtccttg 240

ccaccaagct tggtgctcgt c 261

<210> 247
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 247

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tggcctgcga gacctgcacc aagaccaaca tggtgatggt gttcggcgag atcacgacca 120

aggcgaccgt ggactacgag aagatcgtgc gcgacacctg ccgcgagatc gggttcacct 180

ccgacgacgt gggctcgacg ccgaccgctg c 211

<210> 248
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 248

gccatcggcg tgccggancc cctgtccgtg tncgtcgact ccnacggcac cgggaccatc 60

cccgacaagg aganncgggn ganngtcaag gagaacttcg acttcaggcc agggatgatc 120

accatcaacc tcgacctcaa gaagggcggc aacaggttca tcaagaccgc cgcatacggc 180

cactttggcc gtgacgacgc cgacttcacc tgggaggngg tcaagcccct aaagaaggca 240

tccgcttaag aatgtattgg gaagttcact ggacatgagg ttcatcttcg tctggctctg 300

c 301

<210> 249
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 249

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gcccggcatg atcatcatca acctcgacct caagaaaggc ggcaacgggc gctacctcaa 120

gacggcggcc tacgggcact ttgggaggga cgaccccgac ttcacctggg aggtggtgaa 180

gcccctcaag gcggagaagc cgtcttctgc atgaggcgcc tcctctgttt tggaagaagc 240

ttttggtctg gtctggtctg gtctggtgtg cctgcgctct atcatgcttt tttatggctc 300

ctacttgtga ttcttgatct 320

<210> 250
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 250

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gccaccgacg agacccccga gctgatgccg ctgagccacg tgctggccan caagctgggc 120

gcgcgctcac cgagncacgc aagaacggca ctgcgcgtgg ctnaggccnc gacggcaaga 180

cccaggtgac ggtggagtac gtgaacgatg gcggcgccat ggtgcccgtc cgcgtgcaca 240

cgtgctcatc tncacccagc acgacganna ctnaacaacg ac 282

<210> 251
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 251

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cactggccgg aagatcatan tccaggtctc ctacgccatc ggcgtgcccg aaacccctgt 120

cggtgttcgt ggacacgtac ggcaccggcg cgatccccga caaggagatc ctgaagatcg 180

tgaaggagaa cttcgacttc aggcccggca tgatcatcat caacctcgac ctcaagaaa 239

<210> 252
<211> 511
<212> nucleic acid
<213> Zea mays

<400> 252

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gcctacgtgg ccaggcaggc cgccaagagc atcgtggcca gcggcctcgc ccgccgcgcc 180

tcgtgcaggt gtcgtacgcc atcggcgtgc cggagcccct gtccgtgttc gtcaaccgta 240

cggcaacggc acgattcccg acaagggaga ttctcaaaga tcgttaagga gaaactcgaa 300

cttnaanggc cgggaanatt aagcaatcaa acctncgaac ctngaaaaaa gggcggcaac 360

aaggttnaat caaaaancgc ccgcctaagg ncaattnggc ccgttaacca acgcganttc 420

aactgggaag tggtnaaacc cctcaaattc cacaaagcat cggcttaaag gttggaattt 480

cactgtggac attaaggact aancttcctc t 511

<210> 253
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 253

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ccggcctcac cggccgcaag atcatcatcg acacctacgg cggctgggga gcccacggcg 180

ggggcgcctt ctccggcaag gaccccacca angtggaccg cngcggggcc tact 234

<210> 254
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 254

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tcacgtcgga gtccgtgaac gaggggcacc cagacaagct gtgcgaccag gtgtcggacg   180

cggtgctgga cgcctgcctg gcgcaggacc ccgacagcaa ggtggcctgc gagacctgca   240

ccaagacgaa catggtgatg gtgttcggcg agatcaccac caaggcgagc gtgga        295


&lt;210&gt;      255
&lt;211&gt;      257
&lt;212&gt;      nucleic acid
&lt;213&gt;      Zea mays

&lt;400&gt;      255

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agnacctnga cgagaagacc ancttccacc tnaacccanc nggccgctnt gtcattggtg   120

gaccncacgg cgatgcnggc ctcacnggcc gcaagancan catngacacc nacggtggcn   180

ggggagccca tggtggtggc gcntncnccg gcaaggaccc aaccaaggtt gaccgcagcg   240

gacctatgtc gcaaggc                                                  257


&lt;210&gt;      256
&lt;211&gt;      206
&lt;212&gt;      nucleic acid
&lt;213&gt;      Zea mays

&lt;400&gt;      256

ggcgagatca cgaccaaggc gaccgtggac tacgagaaga tcgtgcgcga cacctgccgc    60

gagatcgggt tcacctccga cgacgtgggc ctcgacgccg accgctgcaa ggtgctggtg   120

aacatcgagc agcagtcccc cgacatcgcg cagggcgtgc acgggcactt cacgaagcgg   180

cccgaggaga tcggcgcggg cgacca                                        206


&lt;210&gt;      257
&lt;211&gt;      208
&lt;212&gt;      nucleic acid
&lt;213&gt;      Zea mays

&lt;400&gt;      257

agacaatctt ccacctcaac ccgtctggcc gcttcgtcat cggcggacct cacggcgacg    60
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ctggcctcac tggccggaag atcatcatcg acacctacgg tggctgggga gcccacggcg 120

ggggcgcctt ctccggcaag gacccgacca aggtggaccg cagcggggcc tacgtcgcga 180

ggcaggctgc caagagcatc gtcgccgc 208

<210> 258
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 258

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gtcatccccg agcagtacct cgacgagaag acaatcttcc acctcaaccc gtctggccgt 180

tcgtcatcgg cggacctcac ggcgacgcgg cctcactggc ggaagatcat catcgacacc 240

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gggctagtcn gagcagntgc aaganatgtc gcgcggctg 339

<210> 259
<211> 195
<212> nucleic acid
<213> Zea mays

<400> 259

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ttcggcgaga tcacgaccaa ggcgaccgtg gactacgaga agatcgtgcg cgacacctgc 120

cgcgagatcg ggttcacctc cgacgacgtg ggcctcgacg ccgaccgctg caaggtgctg 180

gtgaacatcg agcag 195

<210> 260
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 260

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agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggcctgcg agacctgcac caagaccaac atggtgatgg 240

tgttcggcga natcacgacc aaggcga 267

<210> 261
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 261

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ggtagagcga gaagaaggca atggcggccg agagcttcct tttcacctcg gagtccgtga 120

acgaggggca ccccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc 180

tcgcgcagga ccccgacagc aaggtggcct gcgagacctg caccaagacc aacatggtga 240

tngtgttcgg cgagatcacg accaangcga cc 272

<210> 262
<211> 335
<212> nucleic acid
<213> Zea mays

<400> 262

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cgccatcgtc caggtgtctt acgccatcgg gtgcccgagc ctctctccgt gttcgtcgac 120

acgtacggca ccggcgcgat ccccgacaag gagatcctca agattgtcaa ggagaactcg 180

atttcaggcc tggcatgatc atcatcaacc ttgacctcaa gaaaggcggc aacgggcgct 240

actcaagagn gcggctacgg ccactttgga agggacgacc tgattcacct gggaggtggt 300

gaagccattc aatcggagaa actttgctaa gcggc 335

<210> 263
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 263

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cgtgaacgag gggcaccccg acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc 180

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ggtgatggtg ttcggcgaga tcacgaccaa 270

<210> 264
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 264

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cagctgtcga cacattcctc ttcacctcgg agtctgtgaa cgagggacac cctgacaagc 120

tctgtgacca ggtctcagat gccgttcttg acgcttgcct tgctgaggac cctgacagca 180

aggttgcttg tgagacctgc acaaagacaa acatggtcat ggtctttggt gagatcacca 240

ccaagg 246

<210> 265
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 265

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cnccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc tcgcgcagga 180

ccccgacagc aaggtggcct gcgagacctg caccaagacc aacatggtga tggtgttcgg 240

cgagatcacg accaaggcga ccg 263

<210> 266
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 266

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aaagaagatg gcagctgtcg acacattcnc tcttcacctn nggagtctgt gaacgaggga 120

caccctgaca agctctgtga ccaggtctca gatgccgttc ttgacgcttg ccttgctgag 180

gaccctgaca gcaaggttgc ttgtgagacc tgcaccaaga ccaacatggt catggtcttt 240

ggtgagatca ccaccaaggc caatgttgac tacgagaaga ttgtcaggga gacct 295

<210> 267
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 267

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ttgtgaacat tgagcagcag tcccctgata ttgctcaggg tgtgcacggc cacttcacca 120

agcgccccga ggagattgga gtggtgacca ggggcacatg tttgggtatg cgactgacga 180

gacccctgag ctgatgcccc tcagccatgt cttgccacca acttggtgct cgtctcacgg 240

agttcgccaa gaatggaact gccctggcna agcccgatgg aagaccag 288

<210> 268
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 268

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ctcncggtgg ctggggagcc cacggcgggg gcgccttctc cggcaaggnc ccgaccaagg 120

tggaccgcag cggggcctac gtcgcgaggc aggctgccaa nagcatcgtc gccgccggcc 180

taacccgccg cgncnttgtc caggtctnct acgccatcgg ntnacccgag cccctttcgg 240

tgttcgtgga cacg 254

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<211> 525
<212> nucleic acid
<213> Zea mays

<400> 269

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tcgacccacg cgtccgccca cgcgtccgcc cacgcgtccg cccacgcgtc cgcccacgcg 120

tccggtcgga tctgggacga gacgagacga tcccngcctc ccctcaaccg gaacttgttt 180

taccccatct catcccactg actccaccca cccacccgcc cgctgcctcc gccggatctc 240

gtcggactcg gatccgcccg accacgacca ccccgcgttg ncgccgcgca gcagcagcag 300

atcagagaag atggccggac tcgacacctt cctcttcacc tcggagtccg tgaacgaggg 360

acaccctgac aagctctgcg accaggtctc agatgctgtt ctggacgctt gccttgctga 420

ggaccctgac agcanggttg cttgcgagac ctgcaccaag accaacatgg tcatggcttt 480

ggtgagatca ccacccaagn caatgntgac tttttnaana ntttg 525

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<211> 312
<212> nucleic acid
<213> Zea mays

<400> 270

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ctcaagaaag gcggcaacgg gcgctacctc aagacggcgg cctacgggca ctttgggagg 120

gacgaccccg acttcacctg ggaggtggtg aagcccctca aggcggagaa gccgtcttct 180

gcatgaggcg cctcctctgt tttggaagaa gcttttggtc tggtctggtc tggtctggtg 240

tgcctgcgct ctatcatgct tttttatggc tcctacttgt gattcttgat ctgccccttg 300

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<210> 271
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 271

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ggccnacntc gcgaggcagn ctgccaanag catcgtcgcc gccggcctcn cncgccgcgc 120

cattgtccag gtctcctacg ccatcggcgt gcccgagccc ctttcggtgt tcgtggacac 180

gtacggcacc ggcgcgatcc ccgacaagga gatcctgaag ancgtgg 227

<210> 272

<211> 234
<212> nucleic acid
<213> Zea mays

<400> 272

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ttcacctcgg ngtccgtgaa cgaggggcac ccagacaagc tgtgcgacca ggtgtcggnc 120

gcggtgctgg acgcctgcct ggcgcaggac cccgacagca aggtggcctg cgagacctgc 180

accaagacga acntngtgat ggtgttcggc gagatcncca ccaaggcgag cgtg 234

<210> 273
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 273

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caacatcgtt tgacacaaaa ccaatgttgc ggcaggtctc cctgacaatc ttctcgtagt 120

caacattggc cttggtggtg atctcaccaa agaccatgac catgttggtc ttggtgcagg 180

tctcacaagc aaccttgctg tcagggtcct cagcaaggca agcgtcaaga acggcatct 239

<210> 274
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 274

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gcaatggcgg ccgagagctt ccttttcacc tcggagtccg tgaacgaggg gcaccccgac 120

aagctgtgcg accaggtgtc ggacgccgtg cttgacgcat gcctcgcgca ggaccccgac 180

agcaaggtgg cctgcgagac ctgcaccaag accaacatgg tgatggtgtt cggcgagatc 240

acgac 245

<210> 275
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 275

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agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggcctgcg agacctgcac caagaccaac catggtgatg 240

gtgttcggcg agatcacgac caaggcga 268

<210> 276
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 276

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gagcccatgg tggtggcgct ttctccggca aggacccaac caaggttgac cgcagcggag 120

cctatgtcgc aaggcaggct gccaagagca tcgtcgccag cggccttgct cgccgcgcca 180

tcgtccaggt gtcttacgcc atcgggtgcc cgagcctctc tccgtgtt 228

<210> 277
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 277

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cgagaagacc atcttccacc ttaacccatc tggccgcttt gtcattggtg gacctcacgg 120

cgatgctggc ctcactggcc gcaagatcat cattgacacc nacggtggct ggggatcccn 180

nnggggtggc cttttctcgg aagagggcna aacnaaggtg gncgtagtgg tntttnntga 240

aanggtagnn tgc 253

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<211> 268
<212> nucleic acid
<213> Zea mays

<400> 278

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ttggtagagc gagcgagaag aaggcaatgg cggcggagag cntcctgttc acctcggagt 120

ccgtgaacga ggggcaccca gacaagctgt gcgaccaggt gtcggacgcg gtgctggacg 180

cctgcctggc gcaggacccc gacagcaagg tggcctgcga gacctgcacc aagacgaaca 240

tggtgatggt gttcggcgag atcaccac 268

<210> 279
<211> 218
<212> nucleic acid
<213> Zea mays

<400> 279

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cgccgccggc ctcgcccgcc gcgccatcgt ccaggtctcc tacgccatcg ggtgcccgag 120

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aagatcgtga aggagaactt cgacttcaag cccggcat 218

<210> 280
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 280

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tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg cgcaggaccc cgacagcaag 180

gtggctgcga gactgcacaa gaccaacatg gtgatggtgt tcggcgagat cacgaacaan 240

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gacgacgtgg gctc 314

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<211> 216
<212> nucleic acid
<213> Zea mays

<400> 281

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cgggtgcccg ancccctttc ggtgttcgtg gacacgtacg gcaccggcgc gatccccgac 180

aaggagatcc tgaagatcgt gaaggagaac ttcgac 216

<210> 282
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 282

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attgacacct acggtggctg gggagcccat ggtggtggcg ctttctccgg caaggaccca 120

accaaggttg accgcagcgg acctatgtcg caaggcaggc tgccaagagc atcgtcgcca 180

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ctccgtgttc gaaaanannn anngcnnggn nntcccccaa nggtttnct 289

<210> 283
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 283

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acaagctgtg cgaccaggtg tcggacgccg tgcttnangc atgcctcgcg caggaccccg 180

acagcaaggt ggcctgcgag acctgcacca agaccaacat ggtgatggtg ttcggcgaga 240

tcacgac 247

<210> 284
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 284

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agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaaa gttgctgcga aanctgcacc aagancaaca tggtgatggt 240

gttcggcgag atcacgacca aggggaccgt ggatt 275

<210> 285
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 285

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cgaggggcac ccagacaagc tgtgcgacca ggtgtcggac gcggtgctgg acgcctgcct 180

ggcgcaggac cccgacagca aggtggcctg cgagacctgc accaagacga acatggtgat 240

ggtgttcggc gagat 255

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<211> 221
<212> nucleic acid
<213> Zea mays

<400> 286

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cattgtccag gtctcctacg ccatcgnctg cccnagcccc tttcggtgtt cgtggacacn 180

tacggcaccg gcgcgatccc cnacaaggag atcctgaaga t 221

<210> 287
<211> 216
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<400> 287

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cccgtctggc cgcttcgtca tcngcggacc tcacggcgac gctggnctnn ctgnnncggn 180

agatcatcat cgacacctan ggttgctggg gagcca 216

<210> 288
<211> 292
<212> nucleic acid
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<400> 288

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tcaaggagaa cttcgatttc aagcctggca tgatcatcat caaccttgac ctcaagaaag 120

gcggcaacgg gcgctacctc aagacggcgg cctacggcca ctttggaagg gacgaccctg 180

acttcacctg ggaggtggtg aagccacttc aagtcggaga aaccttctgc ctaaggcggc 240

ctttttttca gtaagaagct tttggtggtc tgctgtgctt aatcagcttt ta 292

<210> 289
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 289

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aacgggcgct acctcaagac ggcggcctac gggcactttg ggagggacga ccccgacttc 120

acctgggagg tggtgaagcc cctcaaggcg gagaagccgt cttctgcatg aggcgcctcc 180

tctgtttcgg aagaagcttt tggtctggtc tgcctgcgct ctatcatgct tttttatggc 240

tcctacgtgt tgtgattctt gatctgcccc ttgctt 276

<210> 290
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 290

cgccatcggc gtgccggagc ccctgtccgt gttcgtcaac tcgtacggca ccggcacgat 60

ccccgacaag gagatcctca agatcgtgaa ggagaacttc gacttcangc ccgggatgat 120

cagcatcaac ctcgacctga agaagggcgg caacaggttc atcaagaccg ccgcctacgg 180

ccattcggcc gtgacgacgc cgacttcact gggagtggt 219

<210> 291
<211> 191
<212> nucleic acid
<213> Zea mays

<400> 291

catgccgcaa cattggtttc gtgtcgaacg atgtcgggct tgacgctgac cactgcaagg 60

tgcttgtgaa cattgagcag cagtcccctg atattgctca gggtgtgcac ggccacttca 120

ccaagcgccc cgaggagatt ggagctggtg accaggggca catgtttggg tatgcgactg 180

acgagacccc t 191

<210> 292
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 292

gacgagacga gttaccatct catcccaact ccggaacgaa caagttacca tctcatccca 60

actccgcctc gaccggnncn cgtcggactc gganccgccc gaccaccccg cgccgccgca 120

gatcaaagaa gatggcagcn gtcgacacat tcctcttcac ctcggagtct gtgaacgagg 180

gacaccctga caagcnctgt gaccaggtct cagatgccgt tcttgacgct tgccttgnng 240

aggaccctga cagcaaggtt gcttgtgaga cctgcaccaa gaccaacatg gtcatggtct 300

ttggtgagan nacca 315

<210> 293
<211> 501
<212> nucleic acid
<213> Zea mays

<400> 293

agagcatcgn ggccagcggc ctcgcccgcc gctgcctngt gcaaggtgtc ctancccant 60

nggngtgccg gaacccctgt caatgntcgg cganttctac ggcaccggga ccatncccga 120

caaggagatc ctcaagatcg tcaaggagaa cttcgacttc aggccccggg atnatcacca 180

tcaacctcga cctcaanaaa gggcggcaac aggttcatca agaccgccgc atacngncac 240

tttggcccgt gacgancnca ctttacctgg gaagtggtca atcccctaaa gaaagccatn 300

ccncttaaga atgtanttgg naagtttact tggacatgaa gttcattctt ngtctngctt 360

ctgctgatnc cctnnaanga ttgcttgntn cttgcttgcc cctngattgt ntgttttgan 420

caantgantt ngcttgntct tgttccatnt gaaaaaccnn attaatngtg gnccntttgg 480

tgaaaaaaag ntttngccna t 501

<210> 294
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 294

gcctcttctc ctccctcctg ccgggtcctt aataaagagc agcagcgcaa gaggttggta 60

gagcgagcga gaagaaggca atggcggcgg agagcttcct gttcacctcg gagtccgtga 120

acgaggggca cccagacaag ctgtgcgacc aggtgtcgga cgcggtgctg gacgcctgcc 180

tggcgcagaa ccccgacagc aagtggcctg cgagacctgc accaagacga acatggtgat 240

ggtgttcggc gaantcacca ccagggnagn tggatacgaa t 281

<210> 295
<211> 486
<212> nucleic acid
<213> Zea mays

<400> 295

gggnanttnt tnnagncctt cnacgcgnnc agtaccggtc acagaattcc cgggncgacc 60

acgcgtccnc ggacgcgtgg gcgacaagga gatcctcang atcgtgaagg agannttcac 120

ttcaggcccg ggatgatcag catcaacctc gacctgaaga agggcggcaa caggttctca 180

agaccgccgc ctacggccac ttcggccgtg acnacgccga cttcacctgg gaggtgtgaa 240

gcccctcaag ttcgacaagg catcggctta aggttgggan tgtcactgtg gacataggac 300

taccttcctc tggctctgct gttacctgca agcattgctg ctgctggatg tgtggtttga 360

tcagtgactg gctgctgctc catagaagat gaacggagag aaggatgatg aangctttgg 420

caatcgcccg ctgcaactgc aacccatgcc atgccggctt aatgattggg taaattttgg 480

cttnca 486

<210> 296
<211> 173
<212> nucleic acid
<213> Zea mays

<400> 296

tacgtcgcca ggcaggccgc caagagcatc gtggccagcg gcctcgcccg ccgctgcctc 60

gtgcaggtgt cctacgccat cggcgtgccg gagcccctgt ccgtgttcgt cgactcctac 120

ggcaccggga ccatccccga caaggagatc ctaaagatcg tcaaggagaa ctt 173

<210> 297
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 297

cgcctcttct cctccctcct gccgggtcct taataaagag cagcagcgca agaggttggt 60

agagcgagcg agaagaaggc aatggcggcg gagagcttcc tgttcacctc ggagtccgtg 120

aacgaggggc acccagacaa gctgtgcgac caggtgtcgg acgcggtgct ggacgcctgc 180

ntggcgcagg accccgacag caaggtggcc tgcnatncct ncacnangac gaacatggtg 240

atggtgttcg gcgaaatcac cncnantgcg acntngac 278

<210> 298
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 298

ggcgtgccgg agcccctgtc cgtgttcgtc gactcctacg gcaccgggac catccccgac 60

aaggagatcc taaagatcgt caaggagaac ttcgacttca ggccagggat gatcaccatc 120

aacctcgacc tcaagaaggg cggcaacagg ttcatcaaga ccgccgcata cggccacttt 180

ggcntgacga cgccgacttc acctgggagg tggtcaagcc cctaaagaag gcatccgctt 240

aagaatgtat tgggaagttc actggacatg aggttcatct tcgtctggct ctgctgatac 300

ctgcaagat 309

<210> 299

<211> 197
<212> nucleic acid
<213> Zea mays

<400> 299

gggagaccng ccgcaacatt ggttttgtgt caaacgatgt tgggcttgac gccgaccacn 60

gcaaggtgct cgtgaacatt gagcagcagt cccctgatat tgctcagggt gtgcatggcc 120

acttcaccaa gcgccccgag gagattggag ctggtgacca gggacacatg ttcgggtatg 180

cgaccgatga gacccct 197

<210> 300
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 300

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggctgcga gacctgcacc nagaccaaca tggtgatngt 240

gttcggcgag atc 253

<210> 301
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 301

cgtgaaacga ggggacaccc tgacaagctc tgcgaccagg tctcagatgc tgttctggac 60

gcttgccttg ctgaggaccc tgacagcaag ttgcttggag acctgcacca agaccaacat 120

ggtcatggtc tttggtgaga tcaccaccaa ggccaatgtc gactacgaga agattgtcag 180

gggagacatg ccgcaaaatt ggtttcgngt naganngatg tggggcttga ngntgaccac 240

ngcanggtgn tnatanaaan ttngnagnan tnccctgtat ttgcgcnggg gggnncnccc 300

nc 302

<210> 302

<211> 460
<212> nucleic acid
<213> Zea mays

<400> 302

cgccgccggc ctcgcccgcc gcgccatcgt ccaggtctcc tacgccatcg gcgtgcccga 60

gcccctatcg gtgttcgtgg acacgtacng gancngngcn annccccgacn agggnaatcn 120

tganaatngn anaagganaa nttnanantn caggcccggt tgatcattat naacctagac 180

ctcaanaaag gcggaaacgg gcnctaccta aagacggggg tctacgggcn ctttgngagg 240

gacgaccgag anttcacctg agaggtggna aagcccctca aggcggaaaa gccgtcttct 300

gcatgaggcg cctcctctgt ttcngaagaa gcttttggtc tggtctgcct gcgctctatc 360

atgctttttt atggctncta cgtgttgtga ttcttgatct gccccttgct tatcatttgt 420

actgtactgt cactgtccta ataagtggta cgtgtgcggg 460

<210> 303
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 303

gtctatgtng caangnacgc tgcnaagagc atngtcnccc agcggccttg ctcgcngcgc 60

natngnccca ggtgtattat cgccatccgg cnngncngng cntctcnccg tgttcgtcga 120

cacgtacggc accggcgcga tccccgacaa ggngnncnct gaagattgta caaggagaac 180

ttcgatttca ggcctggcat gatcatnnnc aaccttganc tcaagaaagg nggcaacggg 240

cgctacctca agacggcggc ctacggcnac tttggaaggg acgaccctga cttcacc 297

<210> 304
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 304

cggatctgag acgagacgag ttaccatctc atcccaactc cggaacgaac aagttaccat 60

ctcatcncaa ctccgtctca ccgaggtccg caagaacgga acctgcccct ggctcaggcc 120

tgatgggaag acccaggtga cagtcgagta ccgcaatgag ggtggtgcca tggtccccat 180

ccgtgtccac accgtcctca tctccaccca gcacgacgag acagtgacca atgatgagat 240

cgctgctgac ctgaaggag 259

<210> 305
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 305

cttctcctcc ctcctgccgg gtccttaata aagagcagca gcgcaagagg ttggtagagc 60

gagcgagaag aaggcaatgg cggcggagag cttcctgttc acctcggagt ccgtgaacga 120

ggggcaccca gacaagctgt gcgaccaggt gtcggacgcg gtgctggacg cctgcctggc 180

gcaggacccc gacagcaagg tggcctgcga nacctgcacc aagacgaaca tggtgatggt 240

gttc 244

<210> 306
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 306

cgtcggactc ggatccgccc gaccacgacc accccgcgcc gccgccgcgc acagcagcag 60

atcagagaag atggccggac tcgacacctt cctcttcacc tcggagtccg tgaacgaggg 120

acaccctgac aagctctgcg accaggtctc agatgctgtt ctggacgctt gccttgctga 180

ggaccctgac agcaaggttg cttgcgagac ctgcaccaag accaacatgg tcatgg 236

<210> 307
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 307

cccagcacga cgagacagtc accaacgacg agattnctgg gtagagatga ggactgtgtg 60

cacacggatg ggaaccatgg cgccaccctc atctctaccc agcacnacga gacagtcacc 120

aacgacgaga ttgctgctga cctgaaggag cacgtcatca agccagtcat ccccgagcag 180

tacctcgacg agaagacaat cttacacctc aacccgtctg gccgcttcgt catcggcgga 240

cctcacggcg aggtgggcnt nactggccgg angatntcat cganannagg tgtttgggga 300

nccacggggg 310

<210> 308
<211> 185
<212> nucleic acid
<213> Zea mays

<400> 308

cctgacagca aggttgcttg cgagacctgc accaagacca acatggtcat ggtctttggt 60

gagatcacca ccaaggccaa tgtcgactac gagaagattg tcagggagac atgccgcaac 120

attggtttcg tgtcgaacga tgtcgggctt gacgctgacc actgcaagtg cttgtgaaca 180

ttgag 185

<210> 309
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 309

ccgtttgcct cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg 60

tagagcgaga agaaggcaat ggcggccgag agcttccttt tcacctcggg agtccgtgaa 120

cgaggggcac cccgacaagc tgtgcgacca ggtgtcggac gccgtgcttg acgcatgcct 180

cgcgcaggac cccgacagca aggtggcctg cgagacctgc accaagacca acatggtgat 240

ggtgttcggc gagatcacga ccaaggcgac cg 272

<210> 310
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 310

ctcttctccc tcttgccggt cccgaataaa gagcagcagc gcaagaggtc ggtagagcga 60

gaagaaggca atggcggccg agagcttcct tttcacctcg gagtccgtga acgaggggca 120

ccccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc tcgcgcagga 180

ccccgacagc aaggtggcct gcgagacctg caccaagacc aacatggtga t 231

<210> 311
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 311

gtcggatctg agacgagacg agtcccctcg cntcacccaa ccggaacgaa caagttacca 60

tctcatccca accccgcctg cgaccggntg tcgtcggact cggntccgcn cgaccacccc 120

gcgccgccgc agatcaaaga agatggcagc tctcgacacc ttcctcttca cctcggagtc 180

tgtgaacgag ggacaccctg acaagctctg cgaccaggtc tcagatgccg ttcttgacgc 240

ttgcnttgct gaggaccctg acagcaaggt tgcttgtgag acctgcacca agaccaacat 300

ggtcatg 307

<210> 312
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 312

catccatccc cgttcgcctc ttctcctccc tcctgccggg tccttaataa agagcagcag 60

cgcaagaggt tggtagagcg agcgagaaga aggcaatggc ggcggagagc ttcctgttca 120

cctcggagtc cgtgaacgag gggcacccag acaagctgtg cgaccaggtg tcggacgcgg 180

tgctggacgc ctgcctggcg caggaccccg acagcaaggt ggcctgcgag acctgcacca 240

agacgaacat ggtgatggtg 260

<210> 313
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 313

tgagacgaga cgagttacca tctcatccca actccggaac gaacaagtta ccatctcatc 60

ccaactccgc ctcgaccgga tctcgtcgga ctcggatccg cccgaccacc ccgcgccgcc 120

gcagatcaaa gaagatggca gctgtcgaca cattcctctt cacctcggag tctgtgaacg 180

agggacaccc tgacaagctc tgtgaccagg tctcagatgc cgttcttgac gcttgccttg 240

ctgaggaccc tgacagcaag gttgcttgtg agacctgcac caagacaaca tggtcatggt 300

ctttg 305

<210> 314
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 314

gaagattntc atggatacct gccgcancat tngntttgtg atcanacgat gctgggnttg 60

acgccnacca ctgnaaggtg cncgtgaana ttgatcanca gtcncctgat attgctcang 120

gtntncatgg ccacttcacc aagcgccccg aggagattgg agctggngac cagggacaca 180

tgttcgggta tgctaccnan tagacccntg agttgatgcc cctcagccat gtccttg 237

<210> 315
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 315

tctcatccca ctgactccgn ccacccaccc gcccgctgcc tccgccggat ctcgtcggac 60

tcggatccgc ccgaccacga ccaccccgcg ccgccgccgc gcagagcagc agatcagaga 120

agatggccgg actcgacacc ttcctcttca cctcggagtc cgtgaacgag ggacaccctg 180

acaagctctg cgaccaggtc tcagatgctg ttctggacgc ttgccttgct gaggaccctg 240

acagcaaggt tgcttgcgag acctgcacca agaccaacat 280

<210> 316
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 316

cgtgaaggag aacttcgact tcaggcccgg gatgatcagc atcaacctcg acctgaagaa 60

gggcggcaac aggttcatca agaccgccgc ctacggccac ttcggccgtg acgacgccga 120

cttcacctgg gaggtggtga agcccctcaa gttcgacaag gcatcggctt aaggttggga 180

gtgtcactgt ggacatgagg actaccttcc tctggctctg ctgttacctg caagcattgc 240

tgctgctgga tgngtgtgtt tgatcatga 269

<210> 317
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 317

ccgacaagga gatcctaaag atcgtcaagg agaacttcga cttcaggcca gggatgatca 60

ccatcaacct cgacctcaag aagggcggca acaggttcat caagaccgcc gcatacggcc 120

actttggccg tgacgacgcc gacttcacct gggaggtggt caagccccta aagaaggcat 180

ccgcttaaga atgtattggg aagttcatgg acatgaggtt catcttcgt 229

<210> 318
<211> 418
<212> nucleic acid
<213> Zea mays

<400> 318

tatcatcgtn nccagctgnc tctnccncnn ggngcctttn gcaagtntcc tangccatcg 60

ncgtgccnga ncccctgtcc ntgttcgtcg actcctacng naccnggacc atncccgaca 120

aggagatcct aaagatcttc aaggagaact tcnacttcan gccanggatg atcaccatca 180

acctcgacct caagaaggnc ggcaacaggt tcatcaagac cgncnnatac ggcactttng 240

ccgtgacgac tcctacttca cctgagaagt ggtcaaaccc ctaaagaaag cattcnctta 300

aaaatgtatt nggaanttna actggacatt atgttcatnt ttcntcttgg ttcttctnat 360

acctgcaaag attgctgntt cttctntccn nccttggatg tgtgtttgan caatgant 418

<210> 319
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 319

acgccatcgg cgtgccggag cccctgtccg tgttcgtcga cacctacggc accgnngacc 60

atccccgaca aggagatcct aaagatcgtc aaggagaact tcgacttcag gccagggatg 120

atcaccatca acctcgacct cnagaagggn ggcaacnggn tcntnaagan cggnggaana 180

ggctatttgg ncgtgaangg ntcggattca ncctggtggg gtggtaannc cctnaaangn 240

gnnnncctgt tnnaagnttt tggggag 267

<210> 320
<211> 179
<212> nucleic acid
<213> Zea mays

<400> 320

cccctggctc aggcccgatg ggaagaccca ggtgacantg gagtaccgca acgagggtgg 60

cgccatggtt cccatccgtg tgcacacagt cctcatctct acncagcacg acgagacagt 120

caccaacgac gagattgctg ctgacctgaa ggagcacgtc atcaagccag tcatccccg 179

<210> 321
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 321

cttcacgatc ttgaggatct ccttgtcggg gatcgtgccg gagaacttcg acttcaggcc 60

cgggatgatc agcatcaacc tcgacctgaa gaagggcggc aacaggttca tcaagaccgc 120

cgcctacggc cacttcggcc gtgacgacgc cgacttcacc tgggaggtgg tgaagcccct 180

caagttcgac aaggcatcgg cttaaggttg ggagtgtcac tgtggacatg aggactacct 240

tcctctggct ctgctgttac ctgcaagcat tgctgctgct 280

<210> 322
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 322

ctcttctccc tcttgccggt cccgaataan gagcagcagc gcnagaggtc ggtagagcga 60

gangnaggca atggcggccg agngttcctt ttcaaccttc ggagtccgtg aacgnggggc 120

nccccgaaca agctgtgcga ccaggtgtcg gacgccgtgc ttgatgcatg cctcgcgcng 180

ganccccgac agcnaggtgg cctgcgagat ctgcaccaag accaacatgg tgatggtgtt 240

cggcgagatc acgatcaagg cgancgtgga ctacgngaag atcgtgcgcg acac 294

<210> 323
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 323

gggagccca tggtggtggc gctttctccg gncaccgtag gtgtncaatg atgatcttgc 60

ggccagtgag gccatcattg acacctacgg tggctgggga gcccatngtg gtggcgcttt 120

ctccggcaag gacccaacca aggttgaccg cagcggagcc tatgtcgcaa ggctggctgc 180

caagagcatc gttcgccagc ggccttgctn cgccgcgcca tcgtccaggt gtcttacgcc 240

atcggntggc ccgagcctct ctccgtgttc gtcgacacta 280

<210> 324
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 324

ccgttcgcct ctttctcctc cctcctgccg ggtccttaat aaagagcagc agcgcaaggt 60

gagccgccag cttgccccag gttggtagag cgagcgagaa gaaggcaatg gcggcggaga 120

gcttcctgtt cacctcggag tccgtgaacg aggggcaccc agacaagctg tgcgaccagg 180

tgtcggacgc ggtgctggac gcctgcctgg cgcaggaccc cgacagcaag tggctgcgag 240

acctgcacca agacgaacat ggtgatggtg ttc 273

<210> 325
<211> 215
<212> nucleic acid
<213> Zea mays

<400> 325

ctccctcttg ccggtcccga ataaagagca gcagcgcaag aggtcggtag agcgagaaga 60

aggcaatggc ggccgagagc ttccttttca cctcggagtc cgtgaacgag gggcaccccg 120

acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc atgcctcgcg caggaccccg 180

acagcaaggt ggcctgcgag acctgcacca agacc 215

<210> 326

<211> 291
<212> nucleic acid
<213> Zea mays

<400> 326

gggagaactt cgacttcagg cccgggatga tcagcatcaa cctcgacctg aagaagggcg 60

gcaacaggtt catcaagacc gccgcctacg gccacttcgg ccgtgacgac gccgacttca 120

cctgggaggt ggtgaagccc ctcaagttcg acaaggcatc ggcttaaggt tgggagtgtc 180

actgtggaca tgaggactac cttcctctgg ctctgctgtt acctgcaagc attgctgctg 240

ctggatgtgt gtgtttgatc agtgactggc tgctgctcca tagaagatga a 291

<210> 327
<211> 173
<212> nucleic acid
<213> Zea mays

<400> 327

ggtgagatca ccaccaaggc caatgtcgac tacgagaaga ttgtcaggga gacatgccgc 60

aacattggtt tcgtgtcgaa cgatgtcggg cttgacgctg accactgcaa gtgcttgtga 120

acattgagca gcagtcccct gatattgctc agggtgtgca cggccacttc acc 173

<210> 328
<211> 156
<212> nucleic acid
<213> Zea mays

<400> 328

angaggggca ccccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc 60

tcgcgcagga ccccgacagc aaggtggcct gcgagacctg caccaagacc aacatggtga 120

tggtgttcgg cnagatcacg accanggcga ccgtnt 156

<210> 329
<211> 178
<212> nucleic acid
<213> Zea mays

<400> 329

cccacggcgg gggcgccttc tccggcaagg acccgaccaa ggtggaccgc agcggggcct 60

acgtcgcgag gnaggctgcc aagagcatcg tcgccgccgg cctcgcccgc ngcgccattg 120

tccaggtctc ctacgccatc ggcgtgcccg ancccctttc ggtgttcgtg gacacgta 178

<210> 330
<211> 176
<212> nucleic acid
<213> Zea mays

<400> 330

tagttctaga tcggcaagng cnnccnttgn canatgttcg ggtacgccac cgacgagacc 60

cccgagctga tgccgctgag ccacgtgctg gccaccaagc tgggcgcgcg cctcaccgag 120

gtgcgcaaga acggcacctg cgcctggctg aggcccgacg gcaagaccca ggtgac 176

<210> 331
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 331

cttctcnctc ttgccggtnn cgnntaaaga ncagcagcgc aagaggtcgg tagagcgatg 60

aagaaggcaa tggcggccgn nagcttcctt ttcacctcng antccgtgaa cgangggcan 120

ccnganaagc tgtgcgncca ngtntcggac gccgtgcttg acgcatgcct cgcgcaggan 180

cccgacagca aggtggatgc gagacctgca taagaccaac atggtgatgg tgttcgncga 240

gatcacgacc aaggcgnccg tgg 263

<210> 332
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 332

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcntgac gcatgcctcg 180

cgcaggaccc cgacagcaag gtggcctgcg agacctgcac canga 225

<210> 333

<211> 331
<212> nucleic acid
<213> Zea mays

<400> 333

gtcggatctg agacgagacg agacgannnc ccctcccctc aaccggaact tgttttaccc 60

catctcatcc cactgactcc nnccacccac ccgcccgcng cctccgccgg atctcgtcgg 120

actcggatcc gcncgaccac gaccaccccg cgtcgccgcc gcgcanagca gcagatcaga 180

gaagatggcc ggactcgaca ccttcctctt cacctcggag tccgtgaacg agggacaccc 240

tgacaagctc tgcgaccagg tctcagatgc tgttctggac gcttgccttg ctgaggaccc 300

tgacagcaag gttgcttgcg agacctgcac c 331

<210> 334
<211> 166
<212> nucleic acid
<213> Zea mays

<400> 334

ggaagaccca ggtgacagtg gagtaccgca acgagggtgg cgccatggtt cccatccgtg 60

tgcacacagt cntcatctct acccagcacg acgagacagt caccaacgac gagattgctg 120

ctgacctgaa ggagcacgtc atcaagccag tcatccccga gcagta 166

<210> 335
<211> 170
<212> nucleic acid
<213> Zea mays

<400> 335

ccatggttcc catccgtgtg cacacagtcc tcatctctac ccagcacgac gagacagtca 60

ccaacgacga gattgctgct gacctgaagg agcacgtcat caagccagtc atccccgagc 120

agtacctcga cgagaagaca atnttccacc tcaaccngtt ggnggttcgt 170

<210> 336
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 336

atcatcaacc tcgacctcaa gaaaggcggc aacgggcgct acctcaagac ggcggcctac 60

gggcactttg ggagggacga ccccgacttc acctgggagg tggtgaagcc cctcaaggcg 120

gagaagccgt cttctgcatg aggcgcctcc tctgtttcgg aagaagcttt tggtctggtc 180

tgcctgcgct ctatcatgct tttttatggc tcctacgtgt tgtgattctt gatctgcccc 240

ttgctta 247

<210> 337
<211> 196
<212> nucleic acid
<213> Zea mays

<400> 337

gcagtnccct gatatngctc agggtgtgca tggccacttc accaagcgcc ccgaggagat 60

tngagcnggt gaccagggac acatgttang gtatgcgacc gatgagacnc ctgagttgat 120

gcccctcagc catgtccttg ccaccaagct aggtgcacgt ntcaaccgag gtccgcaaga 180

acggaaccng ccactg 196

<210> 338
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 338

ctccctcttg ccggtcccga ataaagagca gcagcgcaag aggtcggtag agcgagaaga 60

aggcaatggc ggccgagagc ttccttttca cctcggagtc cgtgaacgag gggcaccccg 120

acaagctgtg cgaccaggtg tcggacgccg tgcttgacgc atgcntcgcg caggaccccg 180

acagcaaggt ggcctgcgag acctncacca a 211

<210> 339
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 339

gacgagacga gttaccatct catcccaact ccggaacgaa caagttacca tctcatccca 60

actnccgcct tcgaccggat ctncgtcgga ctcggatccg cccgaccacc ccgcgccgcc 120

gcagatcaaa gaagatggca gctgtcgaca cattcctctt cacctcggag tctgtgaacg 180

agggacaccc tgacaagctc tgtgaccagg tctcagatgc cgttcttgac gcttgccttg 240

ctgaggaccc tgacagcaag ttgcttgtga gactgcacca agaccaacat ggtcatggtc 300

tt 302

<210> 340
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 340

tcgacttcag gcccgggatg atcagcatca acctcgacct gaagaagggc gncaacaggt 60

tcatcaagac cgccgcctac ggccacttcg gccgtgacga cgccgacttc acctgggagg 120

tggtgaagcc cctcaagttc gacaaggcat cggcttaagg ttgggagtgt cactgtggac 180

atgaggacta ccttcctctg gctctgctgt tacctgcaag cattgctgct ctggatgtgn 240

gtgttaatca ganactgctg ctc 263

<210> 341
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 341

cttcgnactt caggcccggg atgatcagca tcaacctcga cctgaagaag ggcggcaaca 60

ggttcatcaa gaccgccgcc tacggccact tcggccgtga cgacgccgac ttcacctggg 120

aggtggtgaa gcccctcaag ttcgacaagg catcggctta aggttgggag tgtcactgtg 180

gacatgagga ctaccttcct ctggctctgc tgttacctgc aagcattgct gctgctggat 240

gtgtgtgttt gatcagtgac tggctgctgc tccatagaag atgaacggag agaaggatga 300

<210> 342
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 342

atccgtttgc ctcttctccc tcttgccggt cccgaataaa gancagcagc gcaagaggtc 60

ggtanagcga gaagaaggca atggcggccg agagttcctt ttcacntcgg agtccgtgaa 120

cgaggggcac cccgacaagc tgtgcgacca gntgtcggac gccgtgcttg angcatgnct 180

cgcgcaggac cccgacagca aggtggcctg cgagactgca ccaagaccaa nntggtgatg 240

gtgttcggc 249

<210> 343
<211> 196
<212> nucleic acid
<213> Zea mays

<400> 343

caatctncca cntcaacccg nctgagncgc ttcgncatcg gcggacctca cggcgacgcn 60

ggnctcantg gccggaagat acatcatcga cacctacggn ggctggggag cccacggcgg 120

gggcgcctnc tccggcaagg ncccgaccaa ggtggacngc agcggggcct acgtcgcgan 180

gnaggctgcc aagagc 196

<210> 344
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 344

atcaacctcg acctcaagaa aggcggcaac gggcgctacc tcaagacggc ggcctacggg 60

cactttggga gggacgaccc cgacttcacc tgggaggtgg tgaagcccct caaggcggag 120

aagccgtctt ctgcagaggc gcctcctctg ttttggaaga agcttttggt ctgncctggt 180

ctggtctggt gtgccncgcg ctctatcatg ctttttttatg gctcctactt gtgattcttn 240

atctgcccc 249

<210> 345
<211> 143
<212> nucleic acid
<213> Zea mays

<400> 345

cgactcctac ggcaccggga ccatccccga caaggagatc ctaaagatcg tcaaggagaa 60

cttcgacttc aggccaggga tggtcaccat caacctcgac ctcaagaagg gcggcaacag 120

gttcatcaag accgccgcat ang 143

<210> 346
<211> 142
<212> nucleic acid
<213> Zea mays

<400> 346

ccgagcctct ctccgtgttc gtngacacgt acggcaccgg cgcgatcccc gacaaggaga 60

tcctcaagat tgtcaaggag aacttcgatt tcaggcctgg catgatcatc atcaaccttg 120

acctcaagaa aggcggcaac gg 142

<210> 347
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 347

cgagacgagt naccatntca tncccaacnc cggaacgaac aagttaccat ntcatnccca 60

acnccgcct cgaccggatc tccgtcggac tccggatccg cccgaccacn ccgcgccgcc 120

gcagatcaaa gaagatggca gctgtcgaca cattcctctt cacntcggag tctgtgaacg 180

agggacacnc tgacaagctc tgtgaanagg tctcagatgc cgttcttgac gcttgcnttg 240

ctgaggaccc tgacagcaag gttgcttgtg agaccngcac caagacca 288

<210> 348
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 348

gagacgagac gagtcccctc cccccacctc gcctcaccca accggaacga acaagttaca 60

atctcatccc aaccccgcct ccgaccggat ctcgtcggac tcggatccgc ccgaccaccc 120

cgcgccgccg cagatcaaag aagatggcag ctgtcgacac attcctcttc acctcggagt 180

ctgtgaacga gggacaccct gacaagctct gtgaccaggt ctcagatgcc gttcttgacg 240

cttgcnttgc tgaggaccct gacagcaagg ttgcttgtga gacctgca 288

<210> 349

<211> 147
<212> nucleic acid
<213> Zea mays

<400> 349

ccgacaagga gatcctaaag atcgtcaagg agaacttcga cttcaggcca gggatgatca 60

ccatcaacct cgacctcaag aagggcggca acaggttcat caagaccgcc gcatacggcc 120

actttggccg tgacgacgcc gacttca 147

<210> 350
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 350

cttctccctc ttgccggtcc cgaataaaga gcagcagcgc aagaggtcgg tagagcgaga 60

agaaggcaat ggcggccgag agcttccttt tcacctcgga gtccgtgaac gaggggcacc 120

ccgacaagct gtgcgaccag tgtggacgcc gtgcttnacg catgcctcgc gcagaccccg 180

acagcaaggt ggcctgcgag acctgcacca agaccaacaa tgtgatngtg ttcggcgaga 240

tnagancaaa gngactgnga tnca 264

<210> 351
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 351

cgcctcttct cctccctcct gccgggtcct tantaaagag cagcagcgca agaggttggt 60

agagcgagcg agaagaaggc aatggcggcg gagagcttcc tgttcacctc ggagtccgtg 120

aacgaggggc acccagacaa gctgtgcgac caggtgtcgg acgcggtcnt gacggcttcc 180

tggngcagga ccccgacagc aaggtggcct gcgagacctg caccaagang aacat 235

<210> 352
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 352

cgtttgcctc ttctccctct tgccggtccc gaataaagag cagcagcgca agaggtcggt 60

agagcgagaa gaaggcaatg gcggccgaga gcttcctttt cacctcggag tccgtgaacg 120

aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc cgtgcttgac gcatgcntcg 180

cgcaggaccc cgacagcaag gtggcctgcn a 211

<210> 353
<211> 212
<212> nucleic acid
<213> Zea mays

<400> 353

gtttgcntct tctccctctt gccggtcccg aataaagagc agcagcgcaa gaggtcggta 60

gagcgagaag aaggcaatgg cggccgagag cttccttttc acatcggagt ccgtgaacga 120

gggncacncc gacaagctgt gcgaccaggt gtcggacgcc gtgcttgacg catgcntcgc 180

gcaggacccc gacagcaagg tggcctgcga ga 212

<210> 354
<211> 490
<212> nucleic acid
<213> Zea mays

<400> 354

taaagatcgt caaggagaac ttcgacttca ggccagggat ggtcaccatc aacctcgacc 60

tcaagaaggg cggcaacagg ttcatcaaga ccgccgcata cggccacttt ggccgtgacg 120

acnccgactt cacctgggag gtggtcaagc ccctaaagaa ggcatccgct taagaatgta 180

ttgggaagtt cactggacat gaggttcatc ttcgtctggc tctgctgata cctgcaagga 240

tnnnnnnnnn nnnnnnnnnc ctggatgtgt gtttgatcag tgactggctg ctctgctcca 300

tagaagatga atgaagagag agatggtgaa naaggctttg gcaaatggca attgccgaac 360

aagccatgtc gcnccactga ccggcttaat gattggtata atttggtgtg gcaacancca 420

ggattaatgc ccctggnctt ttatcnttac tactaanttg ggctngtccg gtatctaatt 480

ttctttccct 490

<210> 355
<211> 389
<212> nucleic acid

<213> Zea mays

<400> 355

gnnnaggccn ttganangggg gggnttnatg aatcngtacc ggtccggaat tcccgggtcg 60

acccacgcgt ccgcggacgc gtgggcctcg acctcaagaa aggcggcaac gggcgctacc 120

tcaagacggn ggcctacggg cactttggga gggacgaccc cgacttcacc tgggaggtgg 180

tgaagcccct caaggcggag aagccgtctt ctgcatgagg cgcctcctct gtttcggaag 240

aagcttttgg tctggtctgc ctgcgctcta tcatgctttt ttatggctcc tacgtgttgt 300

gattcttgat ctgcccttg cttatcattt gtattgtact gtcactgtcc taataagtgg 360

tacgtgtgcg gggtcgtatt gtgtctgct 389

<210> 356
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 356

gtcggatctg agacgagacg agtcccctcc ccccacctcg cctcacccaa ccggaacgaa 60

caagttacaa tctcatccca accccgcctc gaccggatct cgtcggactc ggatccgccc 120

gaccaccccg cgccgccgca gatcaaagaa gatggcagct gtcgacacat tcctcttcac 180

ctcggagtct gtgaacgagg gacaccctga caagctctgt gaccaggtct cagatgccgt 240

tcttgacgct tgccttgctg aggaccctga cagcaaggtt gcttgtgag 289

<210> 357
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 357

gggatgatca gcatcaacct cgacctgaag aagggcggca acaggttcat caagaccgcc 60

gcctacggcc acttcggccg tgacgacgcc gacttcacct gggaggtggt gaagcccctc 120

aagttcgaca aggcatcggc ttaaggttgg gagtgtcact gtggacatga ggactacctt 180

cctctggctc tgctgttacc tgcaagcatt gctgctgctg gatgtgtgtg tttgatcagt 240

gactggctgc tgctccatag aaga 264

<210> 358
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 358

gggatgatca gcatcaacct cgacctgaag aagggcggca acaggttcat caagaccgcc 60

gcctacggcc acttcggccg tgacgacgcc gacttcacct gggaggtggt gaagcccctc 120

aagttcgaca aggcatcggc ttaaggttgg gagtgtcact gtggacatga ggactacctt 180

cctctggctc tgctgtnacc tgcaagcntt gctgctgctg gatgtntgtg tttgatcagt 240

gantggctgc tgctccatag ang 263

<210> 359
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 359

gagacgagac gagttaccat ctcatcccaa ctccggaacg aacaagttac catctcatcc 60

caactccgcc tcgaccggat ctcgtcggac tcggatccgc ccgaccaccc cgcgccgccg 120

cagatcaaag aagatggcag ctgtcgacac attcctcttc acctcggagt ctgtgaacga 180

gggacaccct gacaagctct gtgaccaggt ctcagatgcc gttcttgacg cttgccttgc 240

tgaggaccct gacagcaagg ttgcttgt 268

<210> 360
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 360

gtcggatctg agacgagacg agtcccctcc ccccacctnc gcctcaccca accggaacga 60

acaagttaca attctcatcc caaccccgcc tcgancggat ctcgtcggac tcggatccgc 120

ccgaccaccc cgcgccgccg cagatcaaag aagatggcag ctgtcgacac attcctcttc 180

acctcggagt ctgtgaacga gggacaccct gacaagctct gtgaccaggt ctcagatgcc 240

gttcttgacg cttgccttgc tgaggaccct gacagcaagg ttgcttgtg 289

<210> 361
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 361

ctcttctccc tcttgccggt cccgaataaa gagcagcagc gcaagaggtc ggtagagcga 60

gaagaaggca atggcggccg agagcttcct tttcacctcg gagtccgtga acgaggggca 120

cccgacaagc tgtgcgacca ggtgtcggac gccgtgcttn acgcatgcct cggcaggacc 180

ccgaaacaag tggctggaga ccttcaccaa gancaatntg gtgatggtgt tcggngaatc 240

acgacaaggc ga 252

<210> 362
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 362

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cggccacttc ggccgtgacg acgccgactt cacctgggag gtggtgaagc ccctcaagtt 120

cgacaaggca tcggcttaag gttgggagtg tcactgtgga catgaggact accttcctct 180

ggctctgctg ttacctgcaa gcattgctgc tgctggatgt gtgtgtttga tcagtgactg 240

gctgct 246

<210> 363
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 363

cgacctggnc gnggacgcgt ggcnngaacg cgtngggccc ggcctcganc cgccncgcca 60

ttgtccagga tntcctacgc cangcggctg cccananccc ctttcggtgt tcgtggacac 120

gtacggcacc ggcgcgatcc ccgacaagga gatcctgaag atcgtgaagg agaacttcga 180

cttcaggccc ggcatgntca tcatcaacct cgacctcaag aaaggcngca agggcgtact 240

<210> 364

<211> 270
<212> nucleic acid
<213> Zea mays

<400> 364

gacgagacga gtcccctccc cccacctacg cctcacccaa ccggaacgaa caagttacaa 60

tctcatccca accccgcctn cgaccggatc tcgtcggact cggatccgcc cgaccacccc 120

gcgccgccgc agatcaaaga agatggcagc tgtcgacaca ttcctcttca cctcggagtc 180

tgtgaacgag ggacaccctg acaagctctg tgaccaggtc tcagatgccg ttcttgacgc 240

ttgccttgct gaggaccctg acagcaaggt 270

<210> 365
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 365

ttctagatcg cgggcggccg ctcgcccacg cgtccgatcc ccgttcgcct cttctcctcc 60

ctcctgccgg gtccttaata aagagcagca gcgcaagagg ttggtagagc gagcgagaag 120

aaggcaatgg cggcggagag cttcctgttc acctcggagt ccgtgaacga ggggcaccca 180

gacaagctgt gcgaccaggt gtcngacgcn gtgctggacg cctgcctggc gcaggacccc 240

gacagcaagg tg 252

<210> 366
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 366

gtcggatctg agacgagacg angngnccct cccctcaacc ggaacttgtt ttaccccatc 60

tcatcccact gactccngcc acccacnann ncnntgcctc cgccggatct cgtcggactc 120

ggatccgccc gaccacgacc accccgcgcc gccgccgcgc agagcagcag atcagagaag 180

atggccggac tcgacacctt cctcttnacc tcggagtccg tgaacgaggg acaccctgac 240

aagctctgcg accaggtctc agatgctgtt ctggacgctt gccttgctga ggaccctgac 300

agaaagttgt tgcgagactg 320

<210> 367
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 367

ggccgggtcg gatctgagac gagacgagtt accatctcat cccaactccg gaacgaacaa 60

gttaccatct catcccaact ccgcctcgac cggatctcgt cggactcgga tccgcccgac 120

caccccgcgc cgccgcagat caaagaagat ggcagctgtc gacacattcc tcttcacctc 180

ggagtctgtg aacgagggac accctgacaa gctctgtgac caggtctcag atgccgttct 240

tgacgcttgc cttgctgagg accctgacag caag 274

<210> 368
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 368

gtcggatctg agacgagacg agttaccatc tcatcccaac tccggaacga acaagttacc 60

atctcatccc aactccgcct cgaccggatc tcgtcggact cggatccgcc cgaccacccc 120

gcgccgccgc agatcaaaga agatggcagc tgtcgacaca ttcctcttca cctcggagtc 180

tgtgaacgag ggacaccctg acaagctctg tgaccaggtc tcagatgccg ttcttgacgc 240

ttgccttgct gaggaccctg acagcaagtt g 271

<210> 369
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 369

gacgagacga gtcccctnac ccccacctac gcctcaccca accggaacga acaagttaca 60

atactgcatc ccaaccccgc ctcgaccgga tctcgtcgga ctcggatccg cccgaccacc 120

ccgcgccgcc gcagatcaaa gaagatggca gctgtcgaca cattcctctt cacctcggag 180

tctgtgaacg agggacaccc tgacaagctc tgtgaccagg tctcagatgc cgttcttgac 240

gcttgccttg ctgaggaacc tgacagcaag gttg 274

<210> 370
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 370

ctcttctccc tcttgccgnt cccgaataaa gagcagcagc gcaagaggtc ggtagagcga 60

gaagaaggca atggcggccg agagcttcct tttcacntcg gagtccgtga acgaggggca 120

cgccgacaag ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc tcgcgcagga 180

cnccgacagc aagtggcctg cga 203

<210> 371
<211> 201
<212> nucleic acid
<213> Zea mays

<400> 371

gcctcttctc ctccctcctg ccgggtcctt aataaagagc agcagcgcaa gaggttggta 60

gagcgagcga gaagaaggca atggcggcgg agagcttcct gttcacctcg gagtccgtga 120

acgaggggca cccagacaag ctgtgcgacc aggtgtcgga cgcggtgctg gacgcctgcc 180

tggcgcagga ccccgacagc a 201

<210> 372
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 372

tcagcatcaa cctcgacctg aagaagggcg gcaacaggtt catcaagacc gccgcctacg 60

gccacttcgg ccgtgacgac gccgacttca cctgggaggt ggtgaagccc ctcaagttcg 120

acaaggcatc ggcttaaggt tgggagtgtc actgtggaca tgaggactac cttcctctgg 180

ctctgctgtt acctgcaagc attgctgctg ctggatgtgt gtgtttgatc agtgactggc 240

tgctgctcca tagaagatga acggagagaa ggatgatgaa gggctttggc aatcgccgct 300

gcaactg 307

<210> 373

<211> 283
<212> nucleic acid
<213> Zea mays

<400> 373

gtcttacgcc atcgggtgcc cgagcctctc tccgtgttcg tcgacacgta cggcaccggc 60

gcgatccccg acaaggagat nctcaagatt gtcaagngaa ttcgatttca ggcctggcat 120

gatcatcatc aaccttgact caagaaaggc ggcaacgggc gctactcaag acgcggccta 180

cggcactttg gaaggagacc tgattcactg ggagtggtga accatcaatg gagaacttgc 240

tcnnngctat tatataantt gtgcgttctg actatngtta nag 283

<210> 374
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 374

cttgccggtc ccgaataaag agcanncagc gcaagagntc ggtagagcga caagaaggca 60

atggcggccg agagcttcct tttcacctcg gagtccgtga acgaggggca ccccgacaag 120

ctgtgcgacc aggtgtcgga cgccgtgctt gacgcatgcc tcgcgcagga ccccgacagc 180

a 181

<210> 375
<211> 201
<212> nucleic acid
<213> Zea mays

<400> 375

ctgccgggtc cttaataaag agcagcagcg caaggngagc cgccagcttg ccccaggttg 60

gtagagcgag cgagaagaag gcaatggcgg cggagagctt cctgttcacc tcggagtccg 120

tgaacgaggg gcacccagac aagctgtgcg accaggtgtc ggacgcggtg ctggacgcct 180

gcctggcgca ggaccccgac a 201

<210> 376
<211> 216
<212> nucleic acid
<213> Zea mays

<400> 376

acatccatcc ccgttcgcct cttctcctcc ctcctgccgg gtccttaata aagagcagca 60

gcgcaagagg ttggtagagc gagcgagaag aaggcaatgg cggcggagag cttcctgttc 120

acctcggagt ccgtgaacga gtggcaccca gacaagctgt gcgaccaggt gtcggacgcg 180

gtgctggacg cctgcctggc gcaggacccc gacagc 216

<210> 377
<211> 130
<212> nucleic acid
<213> Zea mays

<400> 377

gtcgaacgat gtcgggcttg acgctgacca ctgcaaggtg cntgtgaaca ttgagcagca 60

gtcccctgat attgcncagg gtgtgcacgg ccacttcacc aagcgccccg aggagattng 120

agctggtgac 130

<210> 378
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 378

gtcggatctg agacgagacg agacgatccc ccctcncctc aaccggaact tgttttaccc 60

catctcatcc cactgantcc acccacccac ccgcccgntg cntccgccgg atntcgtcgg 120

actcggatcc gcccgaccac gaccaccccg cgtcgccgcc gcgcanagca gcagatcaga 180

gaagatggcc ggactcgaca ccttcntctt cacctcggag tccgtgaacg agggacaccc 240

tgacaagctc tgcgaccagg tctcagatgc tgttctggag gnttgccttg ctgaggaccc 300

tgacag 306

<210> 379
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 379

gagacgagac gannnncccct cccctcaacc ggaacttgtt ttaccccatc tcatcccact 60

gactccancn acccacccgc ncgctgcctc cgccggatct cgtcggactc ggatccgccc 120

gaccacgacc accccgcgtc gccgccgcgc agagcagcag atcagagaag atggccggac 180

tcgacacctt cctcttcacc tcggagtccg tgaacgaggg acaccctgac aagctctgga 240

ccaggtctca gatgctgttc tggacgcttg ccttgctgag gacctgacag caaggttgct 300

tgggagacct gca 313

<210> 380
<211> 134
<212> nucleic acid
<213> Zea mays

<400> 380

gcngacctca nggagcacgt catcaagcnc gtgatccctg agaagtacct cgacgagang 60

accatcttcc acctcaaccc gtccgggcgc ttcgtcatcg gcnggcccca cggtnacncc 120

ngcntcacng gtgc 134

<210> 381
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 381

ccgggtcgga tctgagacga gacgagttac catctcatcc caactccgga acgaacaagt 60

taccatctca tcccaactcc gcctcgaccg gatctcgtcg gactcggatc cgcccgacca 120

ccccgcgccg ccgcagatca aagaagatgg cagctgtcac acattcctct tcacctcgga 180

gtctgtgaac gagggacacc ctgacaagct ctgtgaccag gtctcagatg ccgttcttga 240

cgcttgcctt gctgaggacc ctgacagcaa ggttgcttgt gagactgcac caag 294

<210> 382
<211> 164
<212> nucleic acid
<213> Zea mays

<400> 382

cctgagttga tgcccctcag ccatgtcctt gccagcaaac taggtgctcg tntcaccgag 60

gtccgcaaga gcggaaacct gcccctggct acaggcctga tgggaagacc caggtgacag 120

tcgagtaccg cantgagggt ggtgccatgg tccccatccg tntc 164

<210> 383
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 383

cggagaaacc ttctgnctaa ggccgccgtn ttgaggtagn gnccgtngcc gactttcttg 60

nggnnnaggt tgatnatgat catgccaggc ctgaaatcga agttctcctt gacaatcttg 120

aggatctcct tgtcggngat cagngccagt gcacgtacag ngtcnacgaa cacnganaga 180

ngctcgggca ctccnntnnc ngtaagacan ctggacnatg gttagtgnaa gtnatnccnt 240

tgaanac 247

<210> 384
<211> 207
<212> nucleic acid
<213> Zea mays

<400> 384

cacgtctaat cagacatttt actcagaagt catctttgct tgccggtccc gaataaagag 60

cagcagcgca agaggtcggt agagcgagaa gaaggcaatg gcggccgaga gcttcctttt 120

cacctcggag tccgtgaacg aggggcaccc cgacaagctg tgcgaccagg tgtcggacgc 180

cgtgcttgac gcatgcctcg cgcagga 207

<210> 385
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 385

gggtcggatc tgagacgagg cgagacgacc ccccctcccc tcaaccggaa cttgttttac 60

cccatctcat cccacagnct ccacccannc gcccgctgcc tccgccggat ctcgtcggac 120

tcggatccgc ccgaccaccc cgcgccgccg ccgcgcagag cagcagcaga tcagagaaga 180

tggccggact cgacaccttc ctcttcacct cggagtccgt gaacgaggga caccctgaca 240

agctctgcga ccaggtctca gatgctgttc tggacgcttg ccttgctgag ga 292

<210> 386
<211> 142
<212> nucleic acid
<213> Zea mays

<400> 386

cgcgcgcctc accgaggtgc gcaagaacgg nncacctgcg cctggctgag gcccgacggc 60

aagacccagg tgacggtgga gtacntgaac gagggcggcg ccatggtgcc cgtccgcntg 120

cacaccgtgt catctccaca ca 142

<210> 387
<211> 137
<212> nucleic acid
<213> Zea mays

<400> 387

gngggcgacc agggccacnt gnncgggtac gccaccgacg agaccccga gctgatgcng 60

ctgagccacg ngntggccac caagntgggc gcgcgcntca ccgangngcg caagaacggc 120

acntggcncn tggnnga 137

<210> 388
<211> 159
<212> nucleic acid
<213> Zea mays

<400> 388

gaaaggcggc aacgggcgct acctcaagac ggcggcctac gggcactttg ggaggnacga 60

ccccgacttc acctggnagg tggtgaagcc cctcaaggcg gagaagccgt cttctgcatg 120

aggcgcctcc tctnttttgn aagangcttt tggtcnggt 159

<210> 389
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 389

gacgagacga gtcccctccc cccacctcgc ctcacccaac cggaacgaac aagttacaat 60

ctcatcccaa ccccgcctcg accggatctc gtcggactcg gatccgcccg accaccccgc 120

gccgccgcag atcaaagaag aggcagctgt cgacacattc ctcttcacct cggagtctgt 180

gaacncggga caccctgaca agctctgtga ccangtctca gatgccgttc ttgacgcttg 240

ccttgctgag gaccctgaca gcaaggtt 268

<210> 390
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 390

aagaagggcg gcaacaggtt catcaagacc gccgcctacg gccacttcgg ccgtgacgac 60

gccgacttca cctgggaggt ggtgaagccc ctcaagttcg acaaggcatc ggcttaaggt 120

tgggagtgtc actgtggaca tgaggactac cttcctctgg ctctgctgtt acctgcaagc 180

attgctgctg ctggatgtgt gtgtttgatc agtgactggc tgctgcttcc atagaagatg 240

aaggagagaa ggatgatgaa gggctttggc aatcgccgcg ca 282

<210> 391
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 391

caacgggcgc tacctcaaga cggcggccta cggccacttt ggaagggacg accctgactt 60

cacctgggag gtggtgaagc cactcaagtc ggagaaacct tctgcctaag gcggcctttt 120

tttttcagta agaagctttt ggtggtctgc tgtgcttaat catgctttta tatggcttct 180

acatgttgtg gttctttctt gatctgcacc gcgcttatcg tttgtgttgt actgccctaa 240

taagtggtgc tatgaggact gtttctggtt tt 272

<210> 392
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 392

cggatctgag acgagacgag acgannnncc ctcccctcaa ccggaacttg ttttacccca 60

tctcatccca ctgncctccn gccacccacc cgcncgctgc ctccgccgga tctcgtcgga 120

ctcggatccg cccgaccacg accaccccgc gtcgccgccg cgcagagcag cagatcagag 180

aagatggccg gactcgacac cttcctcttc acctcggagt ccgtgaacga gggacaccct 240

gacaagctct gcgaccaggt ctcagatgct gttctggacg cttgccttgc t 291

<210> 393
<211> 531
<212> nucleic acid
<213> Zea mays

<400> 393

agnnnnnnnn natntaatga atttnangaa tgctctaccn gnaattcccg ggtcgaccca 60

cgcgtccgnc cacncgtccg angagatcct caagatcgng aaggagaact tcgacttcag 120

gcccngnatg atcagcatca acctngacct gaanaaggnc ggcaacaggt tcatcaagac 180

cgacgcctac agtcacttcn gncgtgacga cnccgactta cctggnaggt ggtgaacccc 240

tcaagttcga caaggcatcg ncttaaggct gngaagtgct cactgtggac attgaggact 300

accttactct ggctctgntg gtacctgcaa agcattggct gctgatggat gtntgngnct 360

gatcaagnga ctggctgctg cttcatanna gatntaccgg aganaaagat gatgnataaa 420

ggcttnggca atcggcggtt canctgnaac ccatgccatt ccgcttanng aatggggata 480

anttggcttg gaaanaanca tcattattat ggnctgaact ttcatcttta c 531

<210> 394
<211> 572
<212> nucleic acid
<213> Zea mays

<400> 394

gggggnnnng gnaacttcta tntcgnccgc cacggtccaa aaaatcccgg ggtccgaccc 60

acgcgttccg aggcnacttt tctcccggca aagggaccca aaccaaaggg tttgaaccnc 120

aagccgggaa ccctaatntt cgcaaagggg caanggctng cccaaagaac caatccgtcc 180

gcccaagccg ggccctttgc ctccgcccgc cgccaatccg ttccaangat tgtcttaacg 240

ccaatccgng cgttnccccg aaacctctct ccgttgttcg tcgacacnta cggcaccngg 300

cgcgatcccc gacaaggaan atnctcaaga ttgtcaagga agaacttcna tttcaggcct 360

gngcatgatc atcatcaacc ttgacctcaa gaaangcggc aacggggcgc tacctcaaag 420

acggcggcct aaggccactt tgggaaaggg acnaaccctg aattcaacct ggggaaggtt 480

gttgaaagcc aactcaaaag ttccgaaaaa aanccttctg gcccnaaagg cgggcccttt 540

ttttcnagtt aanaaaccct ttgggggggg nc 572

<210> 395
<211> 127
<212> nucleic acid
<213> Zea mays

<400> 395

cagcggcctt gctcgcngcg ccatcgtcca ggtgtcttac gccatcggcg tgcccgatnc 60

ctctctccgt gttcgtcgac acgtacggca ccggcgcgat ccccgacaag gngatcctca 120

agattgt 127

<210> 396
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 396

tcggnatctg agacgagacg agacgannnn ccctcccctc aaccggaact tgttttaccc 60

catctcatcc cactgactcc ntnnancnac ccgcangctg cctccgncgg atctcgtcgg 120

actcggatcc gcccgaccac gaccaccccg cgtcgccgcc gcgcagagca gcagatcaga 180

gaagatggcc ggactcgaca ccttcctctt cacctcggag tccgtgaacg agggacaccc 240

tgacaagctc tgcgaccagg tctcagatgc tgttctggac gcttgcttgc tgag 294

<210> 397
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 397

cgantnacca tctcatccnc aactccggaa cgaacaagtt accatctcat ccanacttcc 60

gcctcgaccg gatctngtcg gactcggatc cgcccganca ccccgnggcc gccgcngatc 120

ngagaagatg gcagctgtcg acacattcct cttnagctnc ggagtctgtg aacgagggac 180

accctgacaa gncctgtgac caggtctcag atgccgtctt gacgcntgcn ttgctgagga 240

ccctganagc naaggtgctt gtganacctg 270

<210> 398
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 398

catcaacctc gacctcaaga ngggcggcaa caggttcatc aagaccgccg catacggcca 60

ctttggccgt gacgacgccg acttcacctg ggaggtggtc aagcccctaa agaaggcatc 120

cgcttaagaa tgtattggga agttcactgg acatgaggtt catcttcgtc tggctctgct 180

gatacctgca aggatnnnnn nnnnnnnnnn nnnnnnnnga tgtgtgtttg atcagtgact 240

ggctgctctg ctccatagaa gatgaatgaa gagagagatg gtga 284

<210> 399
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 399

atctgagacg agacgnngnc nncctcncct caaccggaac ttgttttacc ccatctcatc 60

ccantgantc nagnnannca cncgcncgct gcntccgncg gatctcttcg gactcggatc 120

cgcccganca cgaccanccc gcgccgccgc cgcgcagagc agcagatcag agaagatggc 180

cggactcgac accttcntct tcacctcgga gtccgtgaac gagggacacc ctgacaagct 240

ctgcgaccag gtctcagatg ctgttctgga ngttgcttgc tgangacctg acagcaa 297

<210> 400
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 400

gtcggatctg agacgagacg agacgatnnc ccctcccctc aaccggaact tgttttaccc 60

catctcatcc cacngactcc ncccacccac ccgcccgctg cctccgccgg atctcgtcgg 120

actcggatcc gcccgaccac gaccaccccg cgtcgccgcc gcgcagagca gcagatcaga 180

gaagatggcc ggactcgaca ccttcctctt cacctcggag tccgtgaacg agggacaccc 240

tgacaagctc tgcgaccagg tctcagatgc tgttctgga 279

<210> 401
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 401

cggatctgag acgagacgag acgatnnncc ctcccctcaa ccggaacttg ttttacccca 60

tctcatccca ctgantctnc ccatccaccc gcccgcngcc tccgccggat ctcgtcggac 120

tcggatccgc ccgaccacga ccaccccgcg tcgccgccgc gcagagcagc agatcagaga 180

agatggccgg actcgacacc ttcctcttca cctcggagtc cgtgaacgag ggacaccctg 240

acaagctctg cgaccaggtc tcagatgctg ttctggacgt tgcttgctga ggacctgaca 300

gcaaggt 307

<210> 402
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 402

gtttgcctct tctccctctt gccggtcccg aataaagagc agcagcgcaa gaggtacggt 60

agagcgagaa gaaggcaatg gcggncgaga gcttcctttt cacctcggag tccgtgaacg 120

angggcaccc cgacaagctg tgcgaccagg tttacaaaan ccgtgcttga cgcatgcctc 180

gcgcagaccc cgacagcaag gtggcttncg agacttncac caagaccaca tggtangttt 240

tngnngntgg nncgncaaag nnaangngtt tnanaaaaat ntnnnnancc c 291

<210> 403
<211> 386
<212> nucleic acid
<213> Zea mays

<400> 403

caagaaagnc ggcaacgggc cgctacctca agacgggggc gnacggccac tttggaaggg 60

acgaccctga cttcacctgg gaggtggtga agccactcaa gtcggagaaa ccttctgcct 120

aaggcggcct ttttttcag taagaagctt ttggtggtct gctgtgctta atcatgcttt 180

tatatggctt ctacatgttg tggttctntc ttgatctgca ccgngcttat cgnntnngtt 240

gtactgncct aataaatnng tgcttatgan gacttgttnn tggntnnnnt antanngttn 300

naatgcttta aaacaatgan tgaattncaa gccannnttt ttttgagaag taannattat 360

tngntaannn gntnngnntn tnnngg 386

<210> 404
<211> 144
<212> nucleic acid
<213> Zea mays

<400> 404

tccgtgttcg tcgacacgta cggcaccggc gcgatccccg acaaggagat cctcaagatt 60

gtcaaggaga acttcgattt caggcctggc atncatcatc atcaaccttg acctcaagaa 120

aggcggcaac gggcgctacc tcaa 144

<210> 405
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 405

agaacttcga cttcaggccc gggatgatca gcatcaacct cgacctgaag aagggcggca 60

acaggttcat caagaccgcc gcctacggcc acttcggccg tgaacgacgc cgacttcacc 120

tgggaggtgg tgaagcccct caagttcgac aaggcatcgg cttaaggttg ggagtgtcac 180

tgtggacatg aggactacct tcctctggct ctgctgttac ctgcaagcat tgctgctgct 240

ggatgtgtgt gtttgatcag tgactggctg ctgtccatag aagatgaacg gag 293

<210> 406
<211> 175
<212> nucleic acid
<213> Zea mays

<400> 406

ggtcaccatc aacctcgacc tcaagaaggg cggcaacagg ttcatcaaga ccgccgcata 60

cggccatttg gncgtgacga cgccgacttc acctgggagg tggtcaagcc cctaaagaag 120

gcatccgctt aagaatgtat tgggaagttc actggacatg aggttcatct tcgtc 175

<210> 407
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 407

agggtgtgca cggccacttc accaagcgcc ccgaggagat tggagctggt gaccaggggc 60

acatgtttgg gntgcgactg acgagacccc tgagtgatgc cctcagccat gtcttgccac 120

caagctggtg tcgtctcacg gagtnccaag atggactgcc ctgntcagcc gtggaagacc 180

agtgcagtga tacgnagagg tggcatgtcc acggtnnnc 219

<210> 408
<211> 178
<212> nucleic acid
<213> Zea mays

<400> 408

gccagggatg atcaccatca acctcgacct caagangggc ggcaacaggt tcatcaagac 60

cgccgcatac ggccactttg gctgaacgac gccgacttca cctgggaggt ggtcaagccc 120

ctaaagaagg catccgctta agaatgtatt gggaagttca ctggacatga ggttcatc 178

<210> 409
<211> 126
<212> nucleic acid
<213> Zea mays

<400> 409

gcaatggcgg cggagagctt cctgttcacc tcggagtccg tgaacgaggg gcacccagnc 60

aagctgttcg ancaggtgtc tgangcggtc tggangcctt cctgnntcag ganccccgaca 120

ntaaag 126

<210> 410
<211> 132
<212> nucleic acid
<213> Zea mays

<400> 410

gacctcaaga ngggcggcaa caggttcatc aagaccgccg catacggcca ctttggccgt 60

gacgacgccg acttcacctg ggaggtggtc aagcccctaa agaaggcatc cgcttaagaa 120

tgtattggga ag 132

<210> 411
<211> 83
<212> nucleic acid
<213> Zea mays

<400> 411

gtcggangcg gtgctggang cctgcctggn gcaggannccc ganagcaagg tggcctgcga 60

ganctgcacc aagangaaca tgg 83

<210> 412
<211> 133
<212> nucleic acid
<213> Zea mays

<400> 412

gcctcgaccg gatctcgtcg gactcggatc cgcccgacca ccccgcgccg ccgcagatca 60

aagaagatgg cagctgtcga cacattcctc ttcacctcgg agtctgtgaa ngaggganac 120

cctgacaagc tct 133

<210> 413
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 413

tcggatctga gacgagacga gacggnnnnc cctcccctca accggaactt gttttacccc 60

atctcatccc agtgantcnt accacncanc cgcgcgcngc ntccgcngga tctngtcgga 120

ctcggatccg cccgaccacg accaccccgc gtcgccgccg cgcagagcag cagatcagag 180

aagatggccg gactcgacac cttcctcttc acctcggagt ccgtgaacga gggacaccct 240

gacaagtctg cgaccaggtc tcagatgtgt ttggacgttg nttgctgagg 290

<210> 414
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 414

aacaggttca tcaagaccgc cgcatacggc cactttggcc gtgacgacgc cgacttcacc 60

tgggaggtgg tcaagcccct aaagaaggca tccgcttaag aatgtattgg gaagttcact 120

ggacatgagg ttcatcttcg tctggctctg ctgatacctg caaggatnnn nnnnnnnnnn 180

nnnnnnnnnn gatgtgtgtt tgatcagtga ctggctgctc tgctccatag aagatgaatg 240

aagagagaga tggtgaagaa ggctttggca aatggcaatt gccgcagcaa gccatgtcgg 300

cgccactgac 310

<210> 415
<211> 85
<212> nucleic acid
<213> Zea mays

<400> 415

ctcagggtgt gcatggccac ttcaccaagc gccccgagga gattggagct ggtgaccagg 60

gacacatgtt cgggtatgcg accga 85

<210> 416
<211> 166
<212> nucleic acid
<213> Zea mays

<400> 416

gagcagcagc gcaaggngan ccgccagctt gccccaggtt ggtagancga gcnagaagaa 60

ggcaatnncg gcggagagtt cctgttcacn tcggagtccg tgaacgangg gcacccagac 120

aagctgtgcg accaggtntc ggacgcggtg ctggacncct gcntgg 166

<210> 417
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 417

aagacggcgg cctatggcca ctttggaagg gacgaccctg acttcacctg ggaggtggtg 60

aagccactgc aagtcggaga aaccttctgc ctaaggcggc ctttttttc agtaagaagc 120

ttttggtggt ctgctgtgct taatcatgct tttatanggc ttctacatgt tgtggttctt 180

tcttgatctg caccgcgctt atcgtttgtg ttgtactgcc ctaataagtg gtgcttatga 240

ggactgtttc tggttttgct gcttatg 267

<210> 418
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 418

acgaccccga cttcacctgg gaggtggtga agcccctcaa ggcggagaag ccgtcttctg 60

catgaggcgc ctcctctgtt ttggaagaag cttttggtct ggtctggtct ggtctggtgt 120

gcctgcgctc tatcatgctt ttttatggct cctacttgtg attcttgatc tgccccttgc 180

ttatcatttg tactgtactg tcactgtcct aataagtggt acgtgtgcgg ggtcgtattg 240

tgtctgctta ttcacctaga ggattatttc tgg 273

<210> 419
<211> 57
<212> nucleic acid
<213> Zea mays

<400> 419

atcgctgctg acctgaagga gcatgtcatc aagcctgtca tccctgagca gtacctt 57

<210> 420
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 420

gtcggatctg agacgagacg nngnnnccct cccctcaacc ggaacttgtt ttaccccatc 60

tcatcccact gactcngncc acccaccann ncantgcctc cgccggatct cgtcggactc 120

ggatccgccc gaccacgacc accccgcgcc gccgccgcgc acagcagcag atcagagaag 180

atggccggac tcgacacctt cctcttcacc tcggagtccg tgaacgaggg acacc 235

<210> 421
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 421

gccaagggat gatcaacaat ccaacntcga nctccaagaa ngggcggnaa caggttcatc 60

aagaccgccg catacggcca ctttggccgt gaacgacgcc gacttcacct gggaggtggt 120

caagccccta aagaaggcat ccgttaagaa tgtattggga agttcactgg acatgaggtt 180

catcttcgtc tggctctgct gatacctgca aggatnnnnn nnnnnnnnnn nnnnnnnnga 240

ttgtgtttga tcagtgactg gctgctctgc tccatagaag atgaatgaag agagaga 297

<210> 422
<211> 88
<212> nucleic acid
<213> Zea mays

<400> 422

cacncacgag accgtcacca acgacgagat cgccgccgac ctcaaggagc acgtcatcaa 60

gcccgtgatc cctgagaagt acctgcga 88

<210> 423
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 423

ccgggtcgga tctgagacga gacgagttac catctcatcc caactccgga acgaacaagt 60

taccatctca tcccaactcc gcctcgaccg gatctcgtcg gactcggatc cgcccgacca 120

ccccgcgcng ccgcagatca aagaagatgg cntcgtcgac acattcctct tcacctcgga 180

gtctgtgaac gagggacacc ctgacaagtc tgtgaccagg tctcagatgc cgttcttgag 240

cttgcnttgc tgaggaccct gacagcaagg ttgttgtgag actgc 285

<210> 424
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 424

accacgacca ccccgcgtcg ccgccgcgca nagcagcaga tcagagnaga tagccggatc 60

tcgacaccnt cctcttcacc tcggagtccg tgaacgaggg acaccctgac aagctctgcg 120

accaggtctc agatgc 136

<210> 425
<211> 217
<212> nucleic acid
<213> Zea mays

<400> 425

cgagacgagt nncctccccc cacctcgcct cacccaaccg gaacgaacaa gttacaatac 60

tcatcccaac cccgccttcg accggatctc gtcggactcg gatccgcccg accaccccgc 120

gccgccgcag atcaaagaag atggcagctg tcgacacatt cctcttcacc tcggagtctg 180

tgaacgaggg acaccctgac aagctctgtg accaggt 217

<210> 426
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 426

cggatctgag acgagacgag ttaccatctc atcccaactc cggaacgaac aagttaccat 60

ctcatcccaa ctccgcctcg accggatctc gtcggactcg gatccgcccg accaccccgc 120

gccgccgcag atcaaagaag atggcagctg tcgacacatt cctcttcacc tcggagtctg 180

tgaacgaggg acacctgaca agctctgtga ccaggctcaa tgccgttctt g 231

<210> 427
<211> 85
<212> nucleic acid
<213> Zea mays

<400> 427

agtacctcga ngagaagacc atcttccacc tcaacccgtc cgggcgcttc gtcatcggnn 60

ggntcgangg tgacgtnggc ctcat 85

<210> 428
<211> 142
<212> nucleic acid
<213> Zea mays

<400> 428

caaccccgcc tcgaccggat ctcgtcggac tcggatccgc ccgaccaccc cgcgccgccg 60

cagatcaaag aagatggcag ctgtcgacac attcctcttc acctcggagt ctgtgaacga 120

gggacaccct gacaagctct gt 142

<210> 429
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 429

cgttcgcctc ttctcctccc tcctgccggg tccttaataa agagcagcag cgcaagaggt 60

tggtagagcg agcgagaaga aggcaatggc ggcgagagct tcctgttcac ctcggagtcg 120

gtgaacgagg ggcacccaga caagctgtgc g 151

<210> 430
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 430

agtgctcctc ctcctatgaa gaaggactct ccacgttctc nccgtcaaag cagtggaaaa 60

cagatttggg cgaggtagca acagcgtctt cagcagcgca gaagctctgg tatacgagga 120

gcccgcctcc aggcagctcc tgctccacca tgttgttgca gtcatagacc aaatctgttt 180

tccactgctt tgacggcgag aantgganna gtgctcctcc tcctatgaag aaggactaca 240

aactagctaa tcttctc 257

<210> 431
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 431

aaagagatga cgaagctctc ggggattcat gagatcattc ccgagatgga gatctgtgac 60

tttgagtttg acccctgtgg gtactcgatg aatggcgtct tcgggcctgc agcctccacc 120

atccacgtga cacccgagga aggtttcagc tacgcaagct acgaagctat gaacttcgac 180

cccagctcac tggtctacag cgatgtgatc aggagggtcc 220

<210> 432
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 432

gggagaaatt cgtgagatct tggnncgtnt cagggcgtgc gagcnctgga atcatgggtt 60

tcacacatag cttcgnctnt tngaatttna tgtactaatg gagtcnaagg gtggcaaaaa 120

gtcnnncngt agtcgttcta tggtgtatga agcgcccctt ggctacagca ttgaggncgt 180

tcgacctgcc ggagcgtgaa gaantccagc tgcggcttac tcgaactgcg ngaatnagcg 240

<210> 433
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 433

cttgtgtcgg tagttttccg ttggctctgg ctgccttcct ctgcttctga gattccaact 60

tgtcttgccc atctctcctt ttcctctctc atcctctctt tcttgcaaca cgtcatccag 120

tggcgatgtc ttcagcagat tcttgtgtct cttctcctgc ctcccctatt ggctttgagg 180

gctatgagaa gcgcctcgag atcacgttct ctgacgcgcc tgtctttgag gacccttgtg 240

gtcgtggcnt gcgcgccctc tcc 263

<210> 434
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 434

taatgctgat ggcaacacaa cattagtctt gaagaagaat gaagctttct tcaagactaa 60

tgctgatggc aacacaacat anttccaagg aaatgacgaa gctctctggt atctctgaaa 120

ttatccctga gaaggagatc tgtgattttg acttcgaacc ctgcggctac tccatgaatg 180

caatccatgg ctctgcgttc tccacgatcc atgtgacgcc tgaggatggg ttcagctacg 240

ccagttatga ggttatgggc ttggatgcca ctgccctgtc ttacggtgac 290

<210> 435

<211> 258
<212> nucleic acid
<213> Zea mays

<400> 435

tggagcagga gctgcctgga ggcgggctcc tcgtgtacca tngcttctgt gntgctgaag 60

acgctgttgc tacctcgccc aaatctgttt tccacngcnt tganggcgag aacgtggaga 120

gtgctcctcn tcgnntgagg agganancaa gnggnnaang ttctntgttg ggagnatnan 180

acgggntgcc atggaggaga nggcgggatt ccttgatgag taatangggg ctctgggntc 240

gattagcttc tgattgtt 258

<210> 436
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 436

cttgctctaa aacaatcgca gtcctgcaag ttgttgctgc tgctcctacc cctgcctctg 60

caattgggtt tgagggatat gagaagcgcc tcgagatcag cttctatgag gcacctgtct 120

tcgctgaccc caacggaagg ggattgtgtg cactcttgcg tccctagatt tactctattt 180

ctgaccatgc acggtgcacc gttgtctctg agctatcaaa cgaggacttt gactctatgt 240

cttatctgag tcaagcctgt ttg 263

<210> 437
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 437

cccaganatg gagatctgtg acttcgactt cnagccctgt ggctactcca tgacatgctg 60

ttcatggcnc tgcnattgtc gaccattcat gngancccnc aggacgggca tcagctaatg 120

aaagcaacan ggncatgggc nttaanccgg ggctcctttc tcatatggtn anctggntaa 180

ganggtgctg aagnnntttn gnccnactga ntncnctgtt gncgtaaccc atcttccggt 240

gatcgggcaa tgcgaagacc tggggg 266

<210> 438

<211> 281
<212> nucleic acid
<213> Zea mays

<400> 438

gggctgcccg gtgtaggcaa gtcaaccatc atgagcgagc tttattaata tgatgcaagc 60

tacctggttt ggtggtaatg cttatgtgat tggtgattct gcaaagcata agcagaagtg 120

gcacgtctac tatgccacca ctgagcaccc ctgaggagct tgttgttact cttgagatgt 180

gcatgactag gctggacaag aagagagctt atgtcttctt caagacctct attgatggtt 240

acacatcttg tgctaaggat atgaccaagc cttcagtgat t 281

<210> 439
<211> 334
<212> nucleic acid
<213> Zea mays

<400> 439

gcagaagtgg cacgtctact atgccaccac tgagcacccc taaggagctt gttgttactc 60

ttgagatgtg catgactagg ctggacaaga agagagctat gtcttcttca agacctctat 120

tgatggttac acatcttgtg ctaaggatat gaccaagcct tcagtggcat cgtcaaggag 180

tgcgtcgtga ccagtggtgc tagcagcaag gccatggcac tcagggtcca tgggtcgtgg 240

gtgtggcttg ttcagcgcct actattcgcg ggagtcggcg aggtgcctgc tgaacttggt 300

ggaagtggag tccattatga tctgacacga cctc 334

<210> 440
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 440

catctatcct ctgaagattg tcatcaagac ctgtggcact accaagctcc tgctcacaat 60

tccaaggatc ctagagcttg tgaagagctg tctatgctct tgtgctgtga antatcccgc 120

gggacgttca tctttcctgg cgnacagcag ccccccaccg gagttctccg aggagttgtg 180

tattaaccgt actttggggg ctgaagtctg gtggcatgct tatgtgattg gagatgcagc 240

aagaccagga cagaagtggc acatctatac gccactgagt acccagagca accatgtcac 300

cttgagatgt gcatgatggt tggacagaag aagcttcatc ttcttcaag 349

<210> 441
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 441

tttctcttat ggngacctgg ntaagagggt gctgaggcgc ttnggtccaa ctgagcnctc 60

tgttgccgtg accatcttcg gtgatcggga caatgcgaag acctggggga cgaaactgna 120

tgctgaggcc tatgcttgca gcaacatggc tgagcaggag cttgccgatt ggtggcttgc 180

tcatctatca gagcttcact gttacggccg aancgacctn tgnttcccag ngcaaacntc 240

gnaaattccg ggnaaantaa 260

<210> 442
<211> 447
<212> nucleic acid
<213> Zea mays

<400> 442

cgtccctgca cacggcggtt ttcagactgc gatccattcc gagcttcgag gaatcgatgg 60

tcnagcttcg gtgactaaga gatcaaactc ttcaagttct acgaggctga agatcctgag 120

catctgtttg gtgaagattc ttatgccatg gaaattcatc gattgatacc gtccttttca 180

tagtcgatca tggttcaagg agattgcatt tgtggatgct ctaatggagt cgaaaggtgg 240

taagaaagtc nnnnnnnnnn nnnnnnnnnt tcatgtacga agctcccctt ggctacaaga 300

tcgaggacgt tcgcccagcc ggaggaatca agaagttcca gactgctgct tattccaact 360

gcgtccgcca gccatcctga tatcgcctca catgcaattc gcggtagagt aggattttaa 420

ttcagttttc ctcttgngtc ngnaggt 447

<210> 443
<211> 192
<212> nucleic acid
<213> Zea mays

<400> 443

gggctgagac ttcgannacg agccctnttg ctattncatg aatgctgnaa atnanccggg 60

gttggggana attcatntga gncnagagga cngattnagc tatgcaagct annaggtcat 120

gggctngaac ccggactctt tntgttatgg tgacctgcct aanagggagc tgangngctn 180

nggtccaaat ga 192

<210> 444
<211> 376
<212> nucleic acid
<213> Zea mays

<400> 444

caaagctnnt gctcgctatt ccgaggntcc ttgnactngn tgaanagctc cngttgcnac 60

tcgctgcagt taaanactnn cgtggaacgt ncatattccn tgaagcacan ccnttcnnac 120

acaagaactt ngntgacgag gttgccttcc tgaatngctt attcngtggn ctnaagtncn 180

gnngcaatgc ttatgtgant ggtgactctg ccaancccgg ncagaagtgn cacgtctact 240

acacnnctga gcaccctgan gagcctgtnn gnactctgga gatgtgcatg actgggctgg 300

acaagancaa agcttcatgn cntcttcaag accactgnnt gatggttact cgctnatncg 360

ccaaggatat caccaa 376

<210> 445
<211> 502
<212> nucleic acid
<213> Zea mays

<400> 445

gtgctagtgg cnangnnntn nngtatnaan gacacactcc ggtncggaat tcccgggtcg 60

acccacgcgt ccgcggacgc gtggggttgc caaagaattn cctnccctac cgtcgtcgnc 120

gctcgtctgg nngggaagtt ccnggacccn ngatttngcc caattctnag gnaaaaannc 180

ggtttacntn ncttaacccn gggnnttctn cctntngtng ttgttaaagg ganaaaattn 240

tnagatctgt tccggatcaa gcgtgcganc tcgggaatca agggttttna cacatatctt 300

ttccatttga aaattgatnt actaaatggn gtctanaagg tggcaaaaag tctnacaata 360

gtcgttctat natgtatgaa gctccccttn gctncagcat tnaggacgtt cgacctgccc 420

gangcctnaa gaaatttcca gtctnctgct tactncaact tcncnaaaaa accattctga 480

tatccttttg cttnctcaat nt 502

<210> 446
<211> 160
<212> nucleic acid
<213> Zea mays

<400> 446

agtngctgca cttaaccgtt nctttggcgg cctgaaatct ggtggnangg gcgggtgtga 60

tnggagatcc agcaagacct ggncagaagt ggcacttntt nnaacgncan tnantnccna 120

ttancaacca atggttaacc tanaaatgtg catnactgna 160

<210> 447
<211> 487
<212> nucleic acid
<213> Zea mays

<400> 447

attacgtccn ctagcccttc gccnncgctc ttttccntna gaggcgccgg caccgangat 60

ccgggncggg ntcnatntnn agaanngggna gtacttgtct cagcccgggg nctgctgcgt 120

cnggtggtgg tnaaggggag aanntcgtna gatctgntcc ggatcaagcg nncganctcg 180

ggaatcaggg gtttcacaca tanctgngnc gatcncgaat tctgatgtac taatggagtc 240

taagggnggc aaaaagtcta gccttacnta cnctatnatg catagaagct cccettggct 300

acagcattna cgaccgttcg anctgtccng aggcgtgaaa aagntccnnt acngctgctt 360

actccaactt gcgcgaaaca anccntcctg aanantcccc ttttggcttc ctcattctaa 420

gcactttaag gaattttaat ntctggacac ttntggantn ttnaccaaan ctcntctggg 480

cctaggg 487

<210> 448
<211> 438
<212> nucleic acid
<213> Zea mays

<400> 448

gaggganntcg ttgagatcta agatagagaa tcgctggggc angngnctgt ggtctgctgc 60

gtagggtggt gntgaanggg agaagtttaa gatctgntcc acagatcacg cgtgcgcgct 120

cgcgaancgg gggttccaca catagcttng tcggtttgaa tttgangtac taatggagtc 180

taagggtggc aagaantcta gcagnagtcg ttccatgatg natgaagctc cccttggcta 240

cagcattgaa gacgttcgac ctgccggaag cgccaaagaa gttncagnct tgntgcttaa 300

ctccaactgg cncaaaagaa nccatnctgn aatccccttt ggnttccccg ntctangagn 360

ttaagaattc ttttcttgca ctttnaatct taacnaatcc ccctgggctg angntttnct 420

gacaaangaa ccaattnc 438

<210> 449
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 449

ctcgattaca aactgtgtac tatgttaatg taatgacata gtttggntga tacagatcgt 60

agtgatgttg tttgaagctg tttgtatnaa ctgtntccta ctatcttgta tgaattatga 120

tgtctgatgt agtntgtatg aactatgtca tattatgttg aatgaagcta ttgcatgccc 180

ttaaaaaana aaaaccnaag annanaatga tctactccaa ntaacgagnt tatgggcttg 240

gatgccactg ntntgnntta tggtgacctt gtcaagaggg tgctnctgnn ctttngccnn 300

tnagagtttt acnttgcctt gaccatcttc nncggncgtg gnatgccggg acatnnggna 360

aggnacttgg tgnanaagtc tttnactgnn acancntgtt cgaacangac ttntnttnaa 420

gcggnctcc 429

<210> 450
<211> 376
<212> nucleic acid
<213> Zea mays

<400> 450

ccaatatctt tactnccgcc cctgcncgta attccctnct ggccncacgc atccngctga 60

agacnctntn tnctacctcn cccnantntg ttttccactn ctttnaccac gagggngggg 120

nagattgctc ctnctnctat caataangac tacaatctgg ctaatcttct ctgctnaaca 180

ngaggaatcc ccatgccatn natnaccaag ncnntagtgc ttgatnanta ataccntctt 240

ctaagntcca tntncttctg aattgnntat antatatcct cacantttca tanttntcan 300

tnagttattc tatcaagcat ccaatccatt ctattgtata ttaaaatttn tctctctnta 360

tncatgtcaa cttcct 376

<210> 451
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 451

ggaagttgga tgctatcgag gagaaggatg gagtgcttga tgagtaagac gggtttctgg 60

tgtcgatttg cttctgagtt tttttctntt ttatatcgtt gcgatctcgt ggttgtcgtt 120

tggttagcag ccaagccagg ctattagtac gaagaatgtc gtctataaac atgtgttcct 180

acgttgccac atgctgagtc aatctgtata cagctagctc taggtggtca gctgcgtcta 240

ccacaatgag catacatgta tggataaatc ttctgtgaaa gcattcgatg aataagggtt 300

gtttt 305

<210> 452
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 452

atgcaagcac cttttgcgaa ggactgcaag ctggctaatc ttgtctgctt ggaggaagtt 60

ggatgctatc gaggagaagg atggagtgct tgatgagtaa gacgggtttc tggctcgatt 120

tgcttctgag ttttttttctt tttatatcgt tgcgatctcg tggatgtcgt ttggttagca 180

gccaagccag gctattagta cgaagaatgt cgctataaac atgtgttcct acgtgccaca 240

tgctgagtca atctgtatac agctantcta ggtggc 276

<210> 453
<211> 501
<212> nucleic acid
<213> Zea mays

<400> 453

gnaagngttt tgaatggggg ntggggngna annnnnnnct ngtaccggtc ggngngtcgn 60

cccacgcnta cgcgccnttg ntagctcggc ccaaatccgt tcttngntgc tttgatggcg 120

agaatgcagc accttttgcg aaggactgca agctggctaa tcttgtctgc ttggaggaag 180

ttggatgcta tcgaggagaa ggatggagtg cttgatgagt aagacgggtt tctggtgtcg 240

atttgcttct gagttttttt ctttttatat cgttgcgatc tcgtgggttg tcggtttggt 300

tagcaagcca agccaggcta ttagtaccaa agaatgtcgn ctataaacat gtgttcctac 360

gttgcacatc ctgagtcnaa tctgtattnc agctagctct aaggtgggtc agcttgcgtc 420

taccacaatg agcataccat gtatggataa atcttctgtg aaagcattcg atgaataagg 480

gttgttttca aaaaaaaaaa a 501

<210> 454
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 454

gtgtcgattt gcttctgagt tntcttcttt ttatatcgtt gcgatctcgt ggttgtcgtt 60

tggttagcag ccaagccagg ctattagtac gaagaatgtc gtctataaac atgtgttcct 120

acgttgccac atgctgagtc aatctgtata cagctagctc taggtggtca gctgcgtcta 180

ccacaatgag catacatgta tggtaaatct tctgtgaaag catcgntgaa taaggtngtt 240

tcgtntt 247

<210> 455
<211> 185
<212> nucleic acid
<213> Zea mays

<400> 455

gtttggttaa gcagccaagc caggctatta gtacgaagaa tgtcgtctat aaacatgtgt 60

tcctacgttg ccacatgctg agtcaatctg tatacagcta gctctaggtg gtcagctgcg 120

tctaccacaa tgagcataca tgtatggata aatcttctgt gaaagcattc gatgaataag 180

ggttg 185

<210> 456
<211> 148
<212> nucleic acid
<213> Zea mays

<400> 456

gtcgtctata aacatgtgtn cctacgttgc cacatgctga gtcaatctgt atacagctag 60

ctctaggtgg tcagctgcgt ctaccacaat gagcatacat gtatggataa atcttctgtg 120

aaagcattcg atgaataagg gttgtttt 148

<210> 457
<211> 109
<212> nucleic acid
<213> Zea mays

<400> 457

ctgtatacag ctagctctag gtggtcagct gcgtctacca caatgagcat acatgtatgg 60

ataaatcttc tgtgaaagca ttcgatgaat aagggttgtt ttcgtgatt 109

<210> 458
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 458

cttcgggcct gcagcctcca ccatccacgt gacacccgag gaaggtttca gctacgcaag 60

ctacgaagct atgaacttcg accccagctc actggtctac agcgatgtga tcaggagggt 120

cctggcaggc ttctctcctt cggacttctc ggtcgcagtt accatctttg gtggccgtgg 180

gttcgccaaa tcatgggcga cgggtgcaga catcgattcc tacatgtgcg gtgatcctgt 240

agagcaaga 249

<210> 459
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 459

cgaantatga acttcgaccc cagctcactg gtctacagcg atgtgatcag gagggtcctg 60

gcaggcttct ctccttcgga cttctcggtc gcagttacca tctttggtgg ccgtggggtt 120

cgccaaatca tgggcgacgg gtgcagacat cgattcctac atgtgcggtg atcctgtaga 180

gcaagagctt cctggtggcg gtctgctgat gtaccagagc tttactgctg ttccctctgg 240

ctctgtatcg ccgaggtcga ccttgcagac ggatggctgg agcagcgatg gaatggagat 300

ggcctcaaat gacgagatgt gtattggctg ctggaatg 338

<210> 460
<211> 165
<212> nucleic acid
<213> Zea mays

<400> 460

cggncttctc ggtcgcagtt accatctttg gtggccgtgg gttcgccaaa tcatgggcga 60

cgggtgcaga catcgattcc tacatgtgcg gtgatcctgt agagcaagag cttcctggtg 120

gcggtctgct gatgtaccag agctttactg ctgttccctc tggct 165

<210> 461
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 461

agccgcccta cctattcctt ctcccagccg tcgagctgcc caacccagag caccagcagc 60

cctcaccttc ttcctctcgg ccggtccttc aaacgagccc gctcgtcttg gagccgccgc 120

cggtctcgtt ctggacgaac gttcaaggag attgcatttg tggatgctct aatggagtcg 180

aaaggtggca agaagtcnnn nnnnnnnnnn nnnnnnttca tgtacgaagc tccccttggc 240

tacaagatcg aggacgttcg cccagccgga ngaatcaaga agttccagac tgc 293

<210> 462
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 462

gacctattcc ttctcccagc cgtcgagctg cccaacccag agcaccagca gccctacacc 60

ttcttcctct acggccggtc cttcaaacga gcccgctcgt acttggagcc gccgccggta 120

ctcgttctgg acgaacgttc aaggagattg catttgtgga tgctctaatg gagtcgaaag 180

gtggcaagaa gtcnnnnnnn nnnnnnnnnn nnttcatgta cgaagctccc cttggctaca 240

agatcgagga cgttcgccca gccggagaat caagcagttc cgactgatg 289

<210> 463

<211> 264
<212> nucleic acid
<213> Zea mays

<400> 463

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ctctcggccg gtccttcaaa cgagcccgct cgtcttggag ccgccgccgg tctcgttctg 120

gacgaacgtt caaggagatt gcatttgtgg atgctctaat ggagtcgaaa ggtggcaaga 180

agtcnnnnnn nnnnnnnnnn nnnttcatgt acgaagctcc ccttggctac aagatcgagg 240

acgttcgccc agccggagga atca 264

<210> 464
<211> 571
<212> nucleic acid
<213> Zea mays

<400> 464

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cacgcgtccg gtccggtggc aatgcttatg tgattggtga ctctgcgaag cccgggcaga 120

agtggcacgt ntactacgcc gctgagcacc ctgaggagcc tgtcgttact ctggagatgt 180

gcatgactgg gctggacaag aagaaagctt ctgtcttctt caagaccact gctgatggtt 240

actcgctgtg cgccaaggag atgaccaagc tctctggtat ctcggacatc atcccagaga 300

tggagatctg tgacttcgac ttcgagccct gtggctactc catgaatgct gttcatggcc 360

ctgctttgtc gaccattcat gtgaccccag aggacggctt cagctatgca agctacgagg 420

tcatgggctt naacccgggc tctttctctt atggngacct ggttaaaaag ggtctnaagt 480

nctttggtca actgaattct ntggtgccgt gaccatnttn gngaanngga caaatgcnaa 540

aaccttgggg accaaactgg attcttaagg c 571

<210> 465
<211> 522
<212> nucleic acid
<213> Zea mays

<400> 465

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tgtgatcaag nggtgtggaa gtacaaagct tctgctcgct attccgagga tccttgaact 180

tgctgaagag ctcctgttgc cactcgctgc agttaaatac tcccgtggaa cgttcatatt 240

ccctgaagca caaccttccc cacacaagaa cttcgctgac gaggttgcct tcctgaatcg 300

cttcttcggt ggcctcaagt ccggtggcaa tgcttatgtg attggtgact ctgcgaagcc 360

cgggcagaag tggcacgtct actacgccgc tgagcaccct gaggagcctg ttgttactct 420

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tgatggttac tcgctgtgcg ccaaggagat gaccaactct ct 522

<210> 466
<211> 515
<212> nucleic acid
<213> Zea mays

<400> 466

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ggtcgaccca cgcgtccgat tccctgaagc acagccttcc ccacacaaga acttcgctga 120

cgaggttgcc tncctgaatc gcttcttcgg tggcctcaag tccggtggca atgcttatgt 180

gattggtgac tctgcgaagc ccgggcagaa gtggcacgtc tactacgccg ctgagcaccc 240

tgaggagcct gttgttactc tagagatgtg catgactggg ctggacaaga agaaagcttc 300

tgtcttcttc aagaccactg ctgatggtta ctcgctgtgc gccaaggaga tgaccaagct 360

ctctggtatc tcggacatca tcccagagat ggagatctgt gacttcgact tcgagccctg 420

tggctactcc atgaatgctg gtcatggcct gcttggcgac cattcatgtg accccaanag 480

gacggtttag ctttgcaagc tacnaggcat ggctt 515

<210> 467
<211> 531
<212> nucleic acid
<213> Zea mays

<400> 467

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ccangcgtcc ggtcttcctc ccgtggcctg tctgtcatct ggctctgaaa cgatggcagt 120

cctgcaagtt gctgctggtg cccctccccc tgtctctgtg attgggttcg agggatttga 180

gaagcgcctt gagatcagct tctctgaggc acctgtcttg gctgacccca gcggaagggg 240

actgcgtgcg ctctcgcgtg cccagatcga ctctgttctt gaccttgctc ggtgcaccat 300

tgtgtccgag ctctcaaacg aggacttcga ctcttatgtc ttatctgagt cgagcctgtt 360

tgtctaccca tacaagattg tgatcaagac ctgtggaact acaaagcttc tgctcgctat 420

tccgaggatc cttgaacttg ctgaagagct cctgttgcca ctcgctgcaa gttaaatact 480

cccgtggaac gttcatattc cctgaagcac aaccttccca cacaagaact t 531

<210> 468
<211> 463
<212> nucleic acid
<213> Zea mays

<400> 468

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cagtcctgca agttgctgct gctgcccctc cccctgtctc tgtgattggg ttcgagggat 120

ttgagaagcg ccttgagatc agcttctctg aggcacctgt cttggctgac cccagcggaa 180

ggggactgcg tgcgctctcg cgtgcccaga tcgactctgt tcttgacctt gctcggtgca 240

ccattgtgtc cgagctctna aacgaggact tcgactctta tgtcttatct gagtcgagcc 300

tgtttgtcta cccatacaag attgtgatca agacctgtgg aactacaaag cttctgctcg 360

ctattcccga ggatccttga acttgctgaa gagctcctgt tgccactcgc tgcagttaaa 420

tacttccgtg gaacggtcat attcctgaac acaagccttc cca 463

<210> 469
<211> 474
<212> nucleic acid
<213> Zea mays

<400> 469

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accaagctct ctggtatctc ggacatcatc ccagagatgg agatctgtga cttcgactcg 180

agccctgtgg ctactccatg aatgctgttc atggccctgc tttgtcgacc attcattgac 240

cccagaggac ggcttcagct atgcaagcta cgaggtcatg ggctttaacc cgggcctttc 300

tcttatggtg acctggttaa gagggtgctg aggtgctttg gtccaactga gtttctgttg 360

ccgtgaccat cttcggtgat cgggacaatg cgaagacctg gggacgaaa ctgatgctga 420

ggcctatgct tgcaagcaac atggttgagc aagtgctgcc gtttggtggc ttcc 474

<210> 470
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 470

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tctctggtat ctcggacatc atcccagaga tggagatctg tgacttcgac ttcgagccct 120

gtggctactc catgaatgct gttcatggcc ctgctttgtc gaccattcat gtgaccccag 180

aggacggctt cagctatgca agctacgagg tcatgggctt taacccgggc tctttctctt 240

atggtgacct ggttaagagg gtgctgaggt gctttggtcc aactgagttc tctgttgccg 300

tgac 304

<210> 471
<211> 450
<212> nucleic acid
<213> Zea mays

<400> 471

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gtcgaccatt catgtgaccc cagaggacgg cttcagctat gcaagctacg aggtcatggg 120

cttcaacccg ggctctttct cttatggtga cctggttaag agggtgctga ggtgctttgg 180

tccaactgag ttctctgttg ccgtgaccat cttcggtgat cgggacaatg cgaagacctg 240

ggggacgaaa ctggatgctg aggcctatgc ttgcagcaac atggttgagc aggtgctgcc 300

gtttggtggc ttgctcatct atcagaagct tnactgttac gggccgaaac gaacccatgg 360

gtcgccgaag gtcaagtcct gcatgaactt cgctggtgac attgtcaaga aatngnttaa 420

aagagtgatg ctccctggga agctgatctg 450

<210> 472

<211> 302
<212> nucleic acid
<213> Zea mays

<400> 472

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gttcttgacc ttgctcggtg caccattgtg tccgagctct caaacgagga cttcgactct 120

tatgtcttat ctgagtcgag cctgtttgtc tacccataca agattgtgat caagacctgt 180

ggaactacaa agcttctgct cgctattccg aggatccttg aacttgctga agagctcctg 240

ttgccactcg ctgcagttan atactcccgt ggaacgttca tattccctga agcacagcct 300

tc 302

<210> 473
<211> 489
<212> nucleic acid
<213> Zea mays

<400> 473

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cggacgcgtg gggatctgtg acttcgactt cgagccctgt ggctactcca tgaatgcttt 120

catggccctg ctttgtcgac cattcatgtg accccagagg acggcttcag ctatgcagct 180

acgaggtcat gggcttcaac ccgggctctt tctcttatgg tgacctggtt aagaggtgct 240

gaggtgcttt ggtccaactg agttctctgt caccgtgacc atcttcggtg atcggacaat 300

gcgaagacct gggggacgaa actggatgct gaggcctatg cttgcagcaa catgttgagc 360

aggtgctgcc gtttggtggc ttgctcatct atcaaaagct tcactgttaa cggcgaaacg 420

aaccaagggt ccccgangtc aagtcctgca tgaacttccc cnggtgacaa tttcaanaat 480

ccncncaaa 489

<210> 474
<211> 446
<212> nucleic acid
<213> Zea mays

<400> 474

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acgatggcag tcctgcaagt tgctgctgct gcccctcccc ctgtctctgt gattgggttc 120

gagggatttg agaagcgcct tgagatcagc ttctctgagg cacctgtctt ggctgacccc 180

agcggaaggg gactgcgtgc gctctcgcgt gcccagatcg actctgttct tgaccttgct 240

cggtgcacca ttgtgtccga gctctcaaac gaggacttcg actcttatgt cttatctgag 300

tcgagcctgt ttgtctaccc atacaagatt gtgatcaaga cctgtggaac tacaaagctt 360

ctgctcgcta ttccgaggat cttgaacttg ctgaaaaact cctggtgcca ctcgctgcaa 420

gttaaatact nccgtggaac gttcat 446

<210> 475
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 475

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gtcgagcctg tttgtctacc catacaagat tgtgatcaag acctgtggaa cnacaaagct 120

tctgctcgct attccgagga tccttgaact tgctgaagag ctcctgttgc cactcgctgc 180

agttaaatac tcccgtggaa cgttcatatt ccctgaagca cagccttccc cacacaagaa 240

cttcgctgac gaggttgcct tcctgaatcg cttcttcggt ggcctcaagt ccgg 294

<210> 476
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 476

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ntgcngatgg ttannnngnn gtgcgcnaag gngatgacca agctctctgg tatctcggac 120

atcatcccag agatggagat ctgtgacttc gacttcgagc cctgtggcta ctccatgaat 180

gctgttcatg gccctgcttt gtcgaccatt catgtgaccc cagaggacgg cttcagctat 240

gcaagctacg aggtcatggg ctttaacccg ggctctttct cttatggtga ctggttaaga 300

gggtgctgag gtgt 314

<210> 477

<211> 309
<212> nucleic acid
<213> Zea mays

<400> 477

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gatcgactct gttcttgacc ttgctcggtg caccattgtg tccgagctct caaatgacga 120

ctttgactct tatgtcttat ctgagtcgag cctgtttgtc tacccgtaca agattgtgat 180

caagacctgt ggaactacaa agcttctgct cgctattccg agnatccttg aacttgctga 240

agagctcctg ttgccactcg ctgcagttaa atactcccgt ggaacgttca tattccctga 300

agcacaacc 309

<210> 478
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 478

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tgtgcgccaa ggagatgacc aagctctctg gtatctcgga catcatccca gagatggaga 120

tctgtgactt cgacttcgag ccctgtggct actccatgaa tgctgttcat ggccctgctt 180

tgtcgaccat tcatgtgacc ccagaggacg gcttcagcta tgcaagctac gaggtcatgg 240

gcttt 245

<210> 479
<211> 592
<212> nucleic acid
<213> Zea mays

<400> 479

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cgggtcgacc cacgcgtccg gtcaggcgnc aatgctnatg tgattgggga ntctgcnaag 120

cccggtcaga agtggcacgt gtactaggcc gctnagcacc ntgaggagcc tgtcgttact 180

ctggagatgt gcatgactgg gctggacaag aagaaagctt ctgtattgtt caagaccact 240

gctgatggtt actngctgtg cgccaaggag atgaccaagc tctctggtat ntnggacatc 300

attccagaga tggagatctg tgacttcnac ttngagccct gtgggctact nnatgaatgc 360

tgttcatggc cctgnttttg tcgaccattc atgtgacccc aaaaggacgg nttttaactn 420

ntgcaagcta cgaggttatg ggctttaaac ccnggncttt tttnnnatgg gggacctnng 480

taaaaagggg tgctgaagtt ncttttggtc caactgaatt nntntgttgn ctgagacnat 540

ttnnngtgat cgggacnant tcgantaact tnggggncna aaacttagtg nt 592

<210> 480
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 480

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ccacacaaga acttcgctga cgaggttgcc ttcctgaatc gcttcttcgg tggcctcaag 120

tccggtggca atgcttatgt gattggtgac tctgcgaacc cgggcagaag tggcacgtct 180

actacgccgc tgagcaccct gaggagcctg ttgttactct agagatgtgc atgactgggc 240

tggacaagaa gaaagcttct 260

<210> 481
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 481

ttccctgaag cacagccttc cccacacaag aacttcgctg acgaggttgc nttcctgaat 60

cgcttcttcg gtggcctcaa gtccggtggc aatgcttatg tgattggtga ctctgcgaac 120

ccgggcagaa gtggcacgtc tactacgccg ctgagcaccc tgaggagcct gttgttactc 180

tagagatgtg catgactggg ctggacaaga agaaagcttc tgtcttcttc aagaccactg 240

ctgatggtt 249

<210> 482
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 482

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gctttgtcga ccattcatgt gaccccagag gacggcttca gctatgcaag ctacgaggtc 120

atgggcttta acccgggctc tttctcttat ggtgacctgg ttaagagggt gctgaggtgc 180

tttggtccaa ctgagttctc tgttgccgtg accatcttcg gtgatcggga caatgcgaag 240

acctggggga cgaaactg 258

<210> 483
<211> 198
<212> nucleic acid
<213> Zea mays

<400> 483

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gatctgtgac ttcgacttcg agccctgtgg ctactccatg aatgctgttc atggccctgc 120

tttgtcgacc attcatgtga ccccagagga cggcttcagc tatgcaagct acgaggtcat 180

gggcttcaac ccgggctc 198

<210> 484
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 484

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cgggctcttt ctcttatggt gacctggtta agagggtgct gaggtgcttt ggtccaactg 120

agttctctgt tgccgtgacc atcttcggtg atcgggacaa tgcgaagacc tgggggacga 180

aactggatgc tgaggcctat gcttgcagca acatggttga gcaggtgctg ccgtttggng 240

gcttgc 246

<210> 485
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 485

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gaggatcctt gaacttgctg aagagctcct gtngccacna cgctgcagtn aaatacnccc 120

cgtggaacgt tcatattccc tgaagcacag ccttccccac acaagaactt cgctgacgag 180

gttgccttcc tgaatcgctt cttcggnggc ctcaagtccg gnggcaatgc ttatgtgatt 240

ggngacnctg cgaacccggg cagaagtngc agtctanacg ccgctgagca cnctgaggag 300

cc 302

<210> 486
<211> 524
<212> nucleic acid
<213> Zea mays

<400> 486

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gaanccctga aagcacagcc ttccccacac aagaacttcg ctgacgaggt tgccttcctg 120

aatccgcttc ttcggtggcc tcaagtccgg tggcantgct tatgtgattg gtgactctgc 180

gaagcccggg cagaagtggc acgtctacta cgccgctgaa gcaccctgag gagcctgttg 240

ttactctaag agatgtgcat gactgggctg gacaagaaga aagcttctgt cttcttcaag 300

accaactgct gatggttact cgctggtgcg ccaaggagat gaccaaagct ctctggtatc 360

tcgggacatc atcccaagag atggagatct gtgactcgac ttcgaagccc tgtggctact 420

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cggctttcag ctattccaag cttacnaagg tcatgggctt taac 524

<210> 487
<211> 178
<212> nucleic acid
<213> Zea mays

<400> 487

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ccctgtggct actccatgaa tgctgttcat ggccctgatt tgtcgaccat tcatgtgacc 120

ccagaggang gcttcagcta tgcaagcnac gaggtcatgg gctttaacnn gggctctt 178

<210> 488
<211> 238
<212> nucleic acid

<213> Zea mays

<400> 488

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cttcggtgat cgggacaatg cgaagacctg gggacgaaa ctggatgctg aggcctatgc 180

ttgcagcaaa atggttaaac agttctgccg ttgggggntt cccacannaa aanaactt 238

<210> 489
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 489

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gaccaaaaga tatcaaagac cacttcccgt cttcctcccg tggctgtctg tcatctggct 120

ctgaaacgat ggcagtcctg caagttgctg ctgctgcccc tccccctgtc tctgtgattg 180

ggttcgaggg atttgagaag cgccttgaga tcagcttctc tgaggcacct gtcttggctg 240

accccagcgg aaggggactg cgtgcgctct cgcgtgccca gatcgactct gttcttgacc 300

ttgc 304

<210> 490
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 490

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tgctgctgct gcccctcccc ctgtctctgt gattgggttc gagggatttg agaagcgcct 120

tgagatcagc ttctctgagg cacctgtctt ggctgacccc agcggaaggg gactgcgtgc 180

gctctcgcgt gcccagatcg actctgttct tnacttgctc ggtgcacca 229

<210> 491
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 491

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caatgcgaag acctgggga cganaactgg atgctgaggc ctatgcttgc agcaacatgg 120

ttgagcaggt gctgccgttt ggtggcttgc tcatctatca gagcttcact gttacggccg 180

aaacgaccca tgggtcgccg aggtcagtcc tgcatgactt cgctggtgac attgtcaaga 240

atcgctcaga gagtgatgct ccctgggaag ctgatgctgt ggatgcggng 290

<210> 492
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 492

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gacctgtgga actacaaagc tatctgctcg ctattccgag gatccttgaa cttggctgaa 120

gagctcctgt tgccactcgc tgcagttaaa tactcccgtg gaacgttcat attccctgaa 180

gcacaacctt ccccaacaca agaacttcgc tgacgagggt tgccntnctg aatcgcntct 240

cggtgggctc aangtcggtg ggaaagctan tgtgattgtn anncngcga 289

<210> 493
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 493

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caatgcgaag acctgggga cgaaactgga tgctgaggnc tatgcttgca gcaanctggt 120

tgagcaggtg ctgccgtttg gtggcttgct catctatcag agcttcactg ttacggccga 180

aacgacccat gggtcgccga ggtcagtcct gcatgacttc gctggtgaca ttgtcaagaa 240

tcgctcagag agtgatgctc cctgggaagc tgatgctgtg gatgagagcg aggaaagaga 300

tgtaaagaag atgnaatg 318

<210> 494
<211> 310
<212> nucleic acid

<213> Zea mays

<400> 494

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tacctccggg tagctgcttt ccagtgacca aaagatatca aagaccactt cccgtcttcc 120

tcccgtggct gtctgtcatc tggctctgaa acgatggcag tcctgcaaat tgctgctgct 180

gcccctcccc ctgtctctgt gattgggttc gagggatttg agaagcgcct tgagatcagc 240

ttctctgagg cactgtcttg ggctgacccc agcggaaggg actgcgtgcg ctctcgcgtg 300

cccagatcga 310

<210> 495
<211> 137
<212> nucleic acid
<213> Zea mays

<400> 495

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tttggtccaa ctgagttctc tgtcaccgtg accatcttcg gtgatcggga caatgcgaag 120

acctggggga cgaaact 137

<210> 496
<211> 111
<212> nucleic acid
<213> Zea mays

<400> 496

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acaatgcgaa gacctggggg acnnaactgg atgctgaggc ctatncttag c 111

<210> 497
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 497

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ggccgctggt tgctgcgaga ggtccgggcc ttcgtgggat cttgaaaatt gaatgttcta 120

atggagtcca agggtggcaa gaagaagtct agcagtagtc gttcctccct gatgtacgaa 180

gctccccttg gctacagcat cgaggatatc cgccctgcag gcggcatcaa gaagttctcc 240

gctgcttact cgaactgcgc gaggaagcca tcctgatatc tctgtcgtca tccccatcct 300

ag 302

<210> 498
<211> 501
<212> nucleic acid
<213> Zea mays

<400> 498

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agggttggga agatctcttg actcacgaca cgagcagcag aattcgtcga gggccgctgg 180

ttgctgcgag aggtccgggc cttcgtggga tcttgaaaat tgaatgttct aatggagtcc 240

aagggtggca agaagaagtc tagcagtagt cgttcctccc tgatgtacga agctcccctt 300

ggctacagca tcgaggatat ccgccctgca ggcggcatca agaagttctc cgctgcttac 360

tcnaactgcn cgaggaagcc atcctgatat ctctgtcgtc atccccatcc taatagccgt 420

naaaaccanc tggaatttca atttgatctn cccaaaatcc ctcgggtnnc cggctttcca 480

gtgaccanag ngatatcaaa g 501

<210> 499
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 499

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agaaaccncc tgcattttca ttttgatctc cctaatctct ccggctagct gctttccagt 120

gaccaaaaga tatcagagac cacctcccgt ggctgtctgc catctggctc tgaaacgatg 180

gcagtcctac aagctgctgc ccctccccct gtctctgtga ttggattcga gggatttgag 240

aagcgccttg agatcagctt ctctgaggca cctgtcttgg ctga 284

<210> 500

<211> 166
<212> nucleic acid
<213> Zea mays

<400> 500

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catcgaggat atccgccctg caggcggcat caagaagttc tccgctgctt acncgaacng 120

cgcgaggaag ccatcctgat atctctgtcg tcatccccat cctagt 166

<210> 501
<211> 440
<212> nucleic acid
<213> Zea mays

<400> 501

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gaggtccggg ccttcgtggg atcttgaaaa ttgaatgttc taatggagtc caagggtggc 120

aagaagaagt ctagcagtag tcgttcctcc ctgatgtacg aagctcccct tggctacagc 180

atcgaggata tccgcctgca ggcggcatca agaagttctc cgctgcttac tcgaactgcg 240

cgaggaagcc atcctgatat ctctgttgtc atccccatcc taatagccgt agaaaccacc 300

tgcattttca ttttgatctc ctaatccctt cggctagctg cttttcaagt gaccaaaaga 360

tatcaaaaga ccactttccc gtctttcttc ccgtggcctg tctgcatctt ggctctgaaa 420

cgatggcagt cctgcaaggt 440

<210> 502
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 502

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gaggaagcca tcctgatatc tctgtcgtca tccccatcct agtagcgtag aaacctcctg 180

cattttcatt ttgatctccc taatctctcc ggctagctgc tttccagtga ccaaaagata 240

tcagagacca cctcccgtgg ctgtctgcca tctggctctg aaacgatggc agtcctacaa 300

<210> 503
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 503

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ctggctctga aacgatggca gtcctacaag ctgctgcccc tccccctgtc tctgtgattg 180

gattcgaggg atttgagaag cgccttgaga tcagcttctc tgaggcacct gtcttggctg 240

accccagcgg aaggggactg cgtgcgctct cgcgtgccca gat 283

<210> 504
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 504

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gagtccaagg gtggcaagaa gaagtctagc agtagtcgtt cctccctgat gtacgaagct 240

ccccttggct acagcatcga ggatatccgc cctgcangcg gcatcaagaa gttctccgct 300

<210> 505
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 505

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gcagcagaat tcgtcgaggg ccgctggttg ctgcgagang tccgggcctt cgtgggatct 180

tgaaaattga atgttctaat ggagtccaag ggtggcaaga agaagtctag cagtagtcgt 240

tcctccctga tgtacgaagc tccccttggc tacagcatcg aggatatccg ccctgcaggc 300

ggcatcaaga att 313

<210> 506
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 506

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ggcggttagg gntgggagat ctcntgactc acgacacgag cagcagaatt cgtcgagggc 120

cgctggttgc tgcgagangt ccgggccttc gtgggatctt gaaaattgaa tgttctaatg 180

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ccccttggct acagcatcga ggatatccgc cctgcaggcg gca 283

<210> 507
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 507

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cagcagaatt cgtcgagggc cgctggttgc tgcgagaggt ccgggccttc gtgggatctt 180

gaaaattgaa tgttctaatg gagtccaagg gtggcaagaa gaagtctagc agtagtcgtt 240

cctccctgat gtacgaagct ccccttggct acagcatcga ggatatccgc cctgcaggcg 300

gcat 304

<210> 508
<211> 439
<212> nucleic acid
<213> Zea mays

<400> 508

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ctcctcctca ttcggtgaaa ggtgcgcagt tagggttggg agatctcttg cctcacgaca 120

cgagcagcag aatttgtcga gggccgctgg ttgctgcgag aggtccgggc cttcgtggga 180

tcttgaaaat tgaatgttct aatggagtcc aagggtggca agaagaagtc tagcagtagt 240

cgttcctccc tgatgtacga agctcccctt ggctacagca tcgaggatat ccgcctgcag 300

gcggcatcaa gaagttctcc gctgcttact cgaactgcgc gaggaaacca tnctgatatc 360

tctggtgnca ttcccattct aatagccgta gaaaccacct gnattttcaa tttgaacttc 420

ccttttaaaa atccttccg 439

<210> 509
<211> 453
<212> nucleic acid
<213> Zea mays

<400> 509

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agaaatatan gccggcgncg cctnctactc attcggtgaa aggtgcgcag ttagggttgg 120

gagatctctt gcctcacgac acgagcagca gaatttgtcg agggccgntg gttgctgcga 180

gaggtccngg ccttcgtggg atcttgaaaa ttgaatgttc taatggagtc caagggttgc 240

aangaaagaa atctagcagt agtcgttcct tcctgatgta cgaaacttcc nttggctnca 300

acatcgagga tattcgccct tgaagcngca ttaaanantt nttcnntngt tactnnaant 360

ttnccangaa accattctta aatnctttgt ngnattccca tcctaatacg tttnaaacan 420

ctgaatttca attgacttct naaaanctag ggt 453

<210> 510
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 510

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ccgctggttg ctgcgagang tccgggcctt cgtgggatct tgaaaattga atgttctaat 180

ggagtccnag ggtggcaaga agaagtctag cagtagtcgt tcctcctgat gtacgaagct 240

ccccttggnt acagcatcga g 261

<210> 511

<211> 190
<212> nucleic acid
<213> Zea mays

<400> 511

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atcctgatat ctctgtcgtc atccccatcc tagtagcgta gaaacctcct gcattttcat 120

tttgatcncc ctaatctctc cggctagctg ctttccagtg accaaaagat atcagagacc 180

acctcccgtg 190

<210> 512
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 512

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gaaatatagg ccgccgccgc ctcctccttg ttcggtgaaa ggtgggcagt tagggttggg 120

agatctcttg actcacgaca cgagcagcag aattcgtcga gggccgctgg ttgctgcgag 180

aggtccgggc cttcgtggga tcttgaaaat gaatgttcta atggagtcca agggtggcaa 240

gaagaagtct agcagtagtc gttcctccct gatgtacgaa gctccccttg gctacagcat 300

cgaggat 307

<210> 513
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 513

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ctcctccttg ttcggtgaaa ggtgggcagt tagggttggg agatctcttg actcacgaca 120

cgagcagcag aattcgtcga gggccgctgg ttgctgcgag aggtccgggc cttcgtggga 180

tcttgaaaat tgaatgttct aatggagtcc aagggtggca agaagaagtc tagcagtagt 240

cgttcctccc tgatgtacga agctcccctt ggctacagca tcgaggatat ccgccctgca 300

gcggcat 307

<210> 514
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 514

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ctcctgcatt ncggtgaaag gtgggcggtt agggttggga gatctcttga ctcacgacac 120

gagcagcaga attcgtcgag ggccgntggt tgctgcgaga ggtccgggcc ttcgtgggat 180

cttgaaaatt gaatgttcta atggagtcca agggtggcaa gaagaagtct agcagtagtc 240

gttcctccct gatgtacgaa gtcccctggc taca 274

<210> 515
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 515

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cctcattcgg tgaaaggtgg gcggttaggg ttgggagatc tcttgactca cgacacgagc 120

agcagaattc gtcgagggcc gctggttgct gcgagaggtc cgggccttcg tgggatcttg 180

aaaattgaat gttctaatgg agtccaaggg tggcaagaag aagtctagca gtagtcgttc 240

ctccctgatg tacgaagctc cccttggcta cagcatcgag gatatccgcc 290

<210> 516
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 516

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tctcttcggt gctagagaaa tataggccgc cgcctcctcc tacattacgg tgaaaggtgg 120

gcggttaggg ttgggagatc tcttgactca cgacacgagc agcagaattc gtcgagggcc 180

gctggttgct gcgagaggtc cgggccttcg tgggatcttg aaaattgaat gttctaatgg 240

agtccaaggg tggcaagaag aagtctagca gtagtcgttc ctccctgatg t 291

<210> 517
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 517

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atataggccg ccgccgcctc ctccttgttc ggtgaaaggt gggcagttag ggttgggaga 120

tctcttgact cacgacacga gcagcagaat tcgtcgaggg ccgctggttg ctgcgagagg 180

tccgggcctt cgtgggatct tgaaaattga atgttctaat ggagtccaag ggtggcaaga 240

agaagtctag cagtagtcgt tcctccctga tgtacgaagc tccccttggc tacagcatcg 300

aggat 305

<210> 518
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 518

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tcattcggtg aaaggtgggc ggttagggtt gggagatctc ttgactcacg acacgagcag 120

cagaattcgt cgagggccgc tggttgctgc gagaggtccg ggccttcgtg ggatcttgaa 180

aattgaatgt tctaatggag tccaagggtg gcaagaagaa gtctagcagt agtcgttcct 240

ccctgatgta cgaagctccc cttggctaca gcatcgagga tatccgccct gcaggcg 297

<210> 519
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 519

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tataggccgc cgcctcctcc tcattcggtg aaaggtgggc ggttagggtt gggagatctc 120

ttgactcacg acacgagcag cagaattcgt cgagggccgc tggttgctgc gagaggtccg 180

ggccttcgtg ggatcttgaa aattgaatgt tctaatggag tccaagggtg gcaagaagaa 240

gtctagcagt agtcgttcct ccctgatgta cgaagctccc cttggctaca gcatcgagga 300

t 301

<210> 520
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 520

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gagcagcaga attcgtcgag ggccgctggt tgctgcgaga ggtccgggcc ttcgtgggat 180

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gttcctccct gatgtacgaa gctccccttg gctacagcat cgaggat 287

<210> 521
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 521

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tcctcattcg gtgaaaggtg ggcggttagg gttgggagat ctcttgactc acgacacgag 120

cagcagaatt cgtcgagggc cgctggttgc tgcgagaggt ccgggccttc gtgggatctt 180

gaaaattgaa tgttctaatg gagtccaagg gtggcaagaa gaagtctagc agtagtcgtt 240

cctccctgat gtacgaagct ccccttggct acagcatcga ggatatccgc cctgcang 298

<210> 522
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 522

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gaaatatagg ccgccgccgc ctcctccttg ttcggtgaaa ggtgggcagt tagggttggg 120

agatctcttg actcacgaca cgagcagcag aattcgtcga gggccgctgg ttgctgcgag 180

aggtccgggc cttcgtggga tcttgaaaat tgaatgttct aatggagtcc aagggtggca 240

agaagaagtc tagcagtagt cgttcctccc tgatgtacga agctcccctt ggctacagca 300

tcgaggatat ccg 313

<210> 523
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 523

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gaaatatang ccgccgccgc ctcctccttg ttcggtgaaa ggtgggcagt tagggttggg 120

agatctcttg actcacgaca cgagcagcag aattcgtcga gggccgctgg ttgctgcgag 180

aggtccgggc cttcgtggga tcttgaaaat tgaatgttct aatggagtcc aagggtggca 240

agaagaagtc tagcagtagt cgttc 265

<210> 524
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 524

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aaatataggc cgccgccgcn ncccnccctt gttcggtgaa aggngggcag ttagggttgg 120

gagatcnctt gactcacgac acgagcagca gaattcntcg agggccgctg gttgcngcga 180

gaggnccggg ccttcgtggg atcttgaaaa ttgaatgtnc taatggagtn caagggtggc 240

aagaagaagt ctagcagtag tcgttcctcc ct 272

<210> 525
<211> 550
<212> nucleic acid
<213> Zea mays

<400> 525

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gcttactcca actgcgcgaa gaagccatcc tgatatccct tttggcttcc tcattctagt 180

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tgataatcga ccagttcccc agtcttgctc cttgcactcc tccctccatc tccagcattg 300

tgttctgatt cacctgctcc aatggctgtt ctttctgctg ctgatgcttc ccggtctcag 360

ctatcgggtt tgagggctat gagaagcgcc ttgagatcac attctctgag gcacctgtct 420

ttgtggaccc tcatgggccg tggtttgcgt gccctctnca gggcccanat tgactctgtt 480

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<210> 526
<211> 537
<212> nucleic acid
<213> Zea mays

<400> 526

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gagatctgcg attttgactt tgaaccctgt ggctactcca tgaatgcgat ccatggctct 180

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cctcgcccaa atctgttttc cactgctttg acggcgagaa cgtggagagt gctcctc 537

<210> 527
<211> 544
<212> nucleic acid
<213> Zea mays

<400> 527

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gggaacacaa catgtgccaa ggaaatgaca aagctctctg gcatctctga aatcatcccc 180

gagatggaga tctgcgattt tgactttgaa ccctgtggct actccatgaa tgcgatccat 240

ggctctgcat tctccacaat ccatgtgacg cccgaggacg gtttcagcta tgccagttat 300

gaggttatgg gcttggatgc cactgctctg tcttatggtg accttgtcaa gagggtcctt 360

cggtgctttg gcccctcgga gttttccgtt gccgtgacca tcttcggcgg gcgtggccat 420

gccgggacat ggggaaaggc acttggtgca naggtctatg actgcaacaa catggtggaa 480

cangagctgc ctggaagcgg gctnctcgtg taccaaagct tctgtgctgc tnaaacnctg 540

ntgc 544

<210> 528
<211> 539
<212> nucleic acid
<213> Zea mays

<400> 528

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ccacgcgtcc gcggacgcgt gggcggacgc gtggggactc atatgtcctt tctgagtcaa 120

gcttgtttat ctgtcctctg aagattgtca tcaagacctg tggcactacc aagctcctgc 180

tcaccattcc aagaatcctt gagcttgctg aagagctgtc tatgccactt gctgctgtga 240

agtactcccg tgggacgttc atctttcctg gcgcacagcc agccccccac aggagcttct 300

ctgaggaagt tgctgcactt aaccgctact ttggcggcct gaaatctggt ggtaatgctt 360

atgtgattgg agatccagca agacctggac agaagtggca cgtcttctac gccactgagt 420

acccagagca accaatggtt aaccttgaaa tgtgcatgac tggtctggac aagaaagaaa 480

gcttctgnct ttttcaagac taatgctgat gggnacacaa catgtgccaa ggaaatgac 539

<210> 529
<211> 472
<212> nucleic acid
<213> Zea mays

<400> 529

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tctctgagga agttgctgca cttaaccgct actttggcgg cctgaaatct ggtggtatgc 240

ttatgtgatt ggagatccag caagacctgg acagaagtgg cacgtcttct acgccctgag 300

tacccagagc aaccaatggt taaccttgag atgtgcatga ctggtctgga caagagaaag 360

cttgtgtctt tttcaagact aatgctgatg ggaacacaac atgtgccaag gaatgacaaa 420

gctctctggc atctctgaaa tcatccccga gatggagatc tgcgattttg ac 472

<210> 530
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 530

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ggtctatgac tgcaacaaca tggtggagca ggagctgcct ggaggcgggc tcctcgtgta 240

ccagagcttc tgtgctgctg aagacgctgt tgctacctcg cccaaatctg ttttccactg 300

ctttgacggc gagaacgtgg agagtgctcc tcctcctatg aagaaggact acaaactggc 360

taatcttcta tgctgggagg aggaagcgga tgccatggag gagaaggcgg gagtgcttga 420

t 421

<210> 531
<211> 437
<212> nucleic acid
<213> Zea mays

<400> 531

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acctgccgga ggcgtgaaga agttccagtc tgctgcttac tccaactgcg cgaagaagcc 180

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tgattctgac caatctctct ggcctgctgc ttcctgataa tcgaccagtt ccccagtctt 300

gctccttgca ctcctcctct catctcagca ttgtgttctg attcacctgc tccaatggct 360

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gcgccttgag atcacat 437

<210> 532
<211> 472
<212> nucleic acid
<213> Zea mays

<400> 532

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gttcatcttt cctggcgcac agccagcccc ccacaggagc ttctctgagg aagttgcgca 180

cttaaccgct actttggcgg cctgaaatct ggtggtaatg cttatgtgat tggagaccag 240

caagacctgg acagaagtgg cacgtcttct acgccactga gtacccagag caaccatggt 300

taaccttgaa atgtgcatga ctggtctgga caagaagaaa gcttccgtcn ttttaaagac 360

taatgctgat gggaacacaa catgtgccaa ggaaatgaca aagctctctg gcactctgaa 420

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<210> 533
<211> 432
<212> nucleic acid
<213> Zea mays

<400> 533

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ctatgaagaa ggactacaag ctggctaatc ttctctgctg ggaggaggaa gcggatgcca 120

tggaggagaa ggcgggagtg cttgatgagt aagacgggct tctggggtcg atttgcttct 180

gagttgttta ttttatatcg tcgcaatttc gtggttgtcg tttggttatt ctgtgaagca 240

gccaagccag gctattgtta tgaaaatttg tcgtctgtaa gcatgtgaac ttccgatgtt 300

gccacatgct ggatcagtct gaataagtaa gtatgcagct ctaggtggtc agctgcgtct 360

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atttgntttt tt 432

<210> 534
<211> 501
<212> nucleic acid
<213> Zea mays

<400> 534

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agaagaaagc ttctggcttt ttcaagacta atgctgatgg gaacacaaca tgtgccaagg 180

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ctgctctgtc ttatggtgac cttgtcaaga gggtccttcg gtgctttggc ccctcggagt 420

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cttggtgcan aggtctatga c 501

<210> 535
<211> 477
<212> nucleic acid
<213> Zea mays

<400> 535

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tctgcattct ccacaatcca tgtgacgccc gaggacggtt tcaagctacg ccattacgan 420

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<210> 536
<211> 442
<212> nucleic acid

<213> Zea mays

<400> 536

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tggagatctg cgattttgac ttcgaaccct gtggctactc catgaatgcg atccatggct 180

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gctttggccc ctcagagttt tccgttgccg tgaccatctt cggcgggcgt ggccatgccg 360

ggacatgggg aaaggcactt ggtgcanaag tctatgactg cacancatgg tggaacanga 420

acttgcctgg agcggcttct ct 442

<210> 537
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 537

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actttggcgg cctgaaatct ggtggtaatg cttatgtgat tggagatcca gcaagacctg 180

gacagaagtg gcacgtcttc tacgccactg agtacccaga gcaaccaatg gttaaccttg 240

aaatgtgcat gactggtctg gacaagaaga aagcttctgt ctttttcaag actaatgctg 300

atgggaacac aacatgtgcc aaggaaatga caaagctctc tggcatctct gaaatcatcc 360

ccgagatgga gatctgcgat tttgactttg aaccctgtgg ctacttcatg aatgccaanc 420

c 421

<210> 538
<211> 410
<212> nucleic acid
<213> Zea mays

<400> 538

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tctggcatct ctgaaatcat ccccgagatg gagatctgcg attttgactt tgaaccctgt 120

ggctactcca tgaatgcgat ccatggctct gcattctcca caatccatgt gacgcccgag 180

gacggtttca gctatgccag ttatgaggtt atgggcttgg atgccactgc tctgtcttat 240

ggtgaccttg tcaagagggt ccttcggtgc tttggcccct cggagttttc cgttgccgtg 300

accatcttcg gcgggcgtgg ccatgccggg acatggggaa aggcacttgg tgcagaggtc 360

tatgactgca acaacatggt ggagcangag ctgcctggag gcgggcttct 410

<210> 539
<211> 475
<212> nucleic acid
<213> Zea mays

<400> 539

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cnctccctcn atctccagca ttgtgttctg attcacctgc tccaatggct gttctttcgc 120

tgctgatgct tccccggtct cagctatcgg gtttgagggc tatgagaagc gccttgaatc 180

acattctctg aggcacctgt ctttgtggac cctcatgggc gtggtttgcg tgcccttcca 240

gggcccagat tgactctgtt ctggatcttg cacggtgcac aattgtgtct gagcttccaa 300

caaggatttc gactcatatg tcctttctga gtcaagcttg tttatctatc ctctaagatt 360

gtcatcaaga cctgtggcac taccaagctc ctgctcacca ttccaagaat cctgagcttg 420

ctgaagaact gtctatgcca cttgctgcgt gaaataatcc cgttgggaac gtcat 475

<210> 540
<211> 500
<212> nucleic acid
<213> Zea mays

<400> 540

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ccacgcgtcc gcccacgcgt ccgcaaagct ctctggcatc tctgaaatca tccccgagtg 120

gagatctgcg attttgactt cgaaccctgt ggctactcca tgaatgcgat ccatggcctg 180

cattctccac aatccatgtg acgcccgagg acggtttcag ctacgccagt tacgagttat 240

gggcttggat gccactgctc tgtcttatgg tgaccttgtc aagagggtcc tccgggcttt 300

ggcccctcag agttttccgt tgccgtgacc atcttcggcg ggcgtggcca tgccggacat 360

ggggaaaggc acttggtgca gaggtctatg actgcaacaa catggtggaa cagagctgcc 420

tggaagcggg ctcctcgtgt aacaaaactt tcgtnccgct gaaaancccg ttccaactcc 480

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<210> 541
<211> 508
<212> nucleic acid
<213> Zea mays

<400> 541

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gttctttctg ctgctgatgn ttccccggtc tcagctatcg ggtttgaggg ctatgagaag 180

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tccgagctct ccaacaagga tttcgactca tatgtcctct ctgagtcaag cttgtttatc 360

tatcctctga agattgtcat caagacctgt ggcactacca agctcctgct caccattcca 420

agaatccttg agcttgctga agaagctgtc tatgccactt gctgctgtga aagtacttcc 480

gtgggacgtc atctttcctg gtgcacac 508

<210> 542
<211> 468
<212> nucleic acid
<213> Zea mays

<400> 542

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ncncagactt ctgcgntctc agctatcggg tttgagggct atgagaagcg ccttgagaca 120

cattctctga ggcacctgtc tttgtggacc ctcatgggcg tggtttgcgt gccctctcag 180

ggcccagatt gactctgttc tggatcttgc acggtgcaca attgtgtctg agctctcaac 240

aaggatttcg actcatatgt cctttctgaa gtcaagcttg tttatctatc ctctgagatt 300

gtcatcaaga cctgtggcac taccaagctc ctgctcacca ttccaagaat ccttagcttg 360

ctgaagagct gtctatgcca cttgctgctg tgaagtactc ccgtgggacg ttctctttcc 420

tgggcgcaca gccagccccc cacangagct tctctganga agttgctg 468

<210> 543
<211> 494
<212> nucleic acid
<213> Zea mays

<400> 543

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tgccgtgacc atcttcggcg ggcgtggcca tgccgggaca tggggaaagg cacttgggca 180

gaggtctatg actgcaacaa catggtggag caggagctgc ctggaggcgg gctcctgtgt 240

accagagctt ctgtgctgct gaagacgctg ttgctacctc gcccaaatct gttttcactg 300

ctttgacggc gagaacgtgg agagtgctcc tcctcctatg aagaaggact acaactggct 360

aatcttctat gctgggagga ggaagcggat gccatggagg agaangcggg agtcttgatg 420

agtaagacgg gcttctgggg tccaattgcc tccganttgg ttaatttaaa actcccaaat 480

ttntgggttg cctt 494

<210> 544
<211> 511
<212> nucleic acid
<213> Zea mays

<400> 544

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tacgctttcg gctacgnnat tctantagtt taggatttct tttctgacac tttgattctg 120

accaatctcn ctggcctgct gcttcctgat aatcgaccag ttccccagtc ttgctccttg 180

cactcctccc tccatctcca gcattgtgtt ctgattcacc tgctccaatg gctgntcttt 240

ctgctgctga tgcttcccgg tctcagctat cgggtttgag ggctatgaga agcgccttga 300

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ntncaggggc cagattgact ctggtctgga tcttgcacgg tgcacaattg tgtncgagct 420

nttcaacaag gatttcgact natatgtcct tctgaatcaa acctggttat ctatcctctg 480

naaaatggca atcaaaaacc tgtgggacta c 511

<210> 545
<211> 478
<212> nucleic acid
<213> Zea mays

<400> 545

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cacctgctcc aatggctgtt ctttctgctg ctgatgcttc cccggtctca agctatcggt 120

ttgagggcta tgagaagcgc cttgagatca cattctctga ggcacctgtc tttgtggccc 180

tcatgggcgt ggtttgcgtg ccctctccag ggcccagatt gactctgttc tggatctgca 240

cggtgcacaa ttgtgtctga gctctccaac aaggatttcg actcatatgt ccttttgagt 300

caagcttgtt tatctatcct ctgaagattg tcatcaagac ctgtggcact accagctcct 360

gctcaccatt ccaagaatcc ttgagcttgc tgaagaactg tctaagccac ttgtgctgtg 420

aaataccccn tgggaaattn aaacctttcc nggngcaaan caacccccca cagagctt 478

<210> 546
<211> 533
<212> nucleic acid
<213> Zea mays

<400> 546

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gaagttgctg tacttaaccg atactttggg ggcctgaagt ctggtggcaa tgcttatgtg 300

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gtcttcttca agactaatgc tgatggcaac acaacatgtt ccaagggaat gaccaaactt 480

tttggnatct ctgaaattat tcctggaaat gganatttgn gattttgact nca 533

<210> 547

<211> 485
<212> nucleic acid
<213> Zea mays

<400> 547

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aggactacaa gctggctaat cttctctgct gggaggagga agcggatgcc atggagggaa 180

ggcgggagtg cttgatgagt aagacgggct tctggggtcg atttgcttct gagttgttat 240

tttatatcgt cgcaatttcg tggttgtcgt ttggttattc tgtgaagcag ccaagcaggc 300

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tnagtctgaa taagtaagta tgcaactcta ngtggtcanc tgcgtctaac acatgaagca 420

tgaacgtntg gagaaatntc cgtgnaaccc atttgtttat gaaaaaanat tgnttttttcn 480

aattt 485

<210> 548
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 548

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atgtgacgcc cgaggacggt ttcagctatg ccagttatga ggttatgggc ttggatgcca 120

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tcctcgtgta ccaaancttc tgtgctgctg aagacgctgt tgctacctcc ccaaatctgt 360

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caaactggct aatcttntat gg 442

<210> 549
<211> 449
<212> nucleic acid
<213> Zea mays

<400> 549

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tgnntggaga tccagcaaga cctggacaga aatggcacgt cttctacgcc actgagtacc 120

cagagcaacc aatggttaac cttgaaatgt gcatgactgg tctggacaag aagaaagctt 180

ctgtcttttt caagactaat gctgatggga acacaacatg tgccaaggaa atgacaaagc 240

tctctggcat ctctgaaatc atccccgaga tggagatctg cgattttgac tttgaaccct 300

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<210> 550
<211> 512
<212> nucleic acid
<213> Zea mays

<400> 550

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tcctganant cnatcatgtt ccncaggtct tgctccttgc actcctccct ccatctcagc 180

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tgtccttttct gagtcaagct tgtttatcta tcctctgnag attgtnntca atccngtggn 480

actaccaagc tcctgctcaa tantcnaaga at 512

<210> 551
<211> 448
<212> nucleic acid
<213> Zea mays

<400> 551

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gcatgactgg tctggacaaa gaaganagct tctgtctttt tcaaagacta atgctgatgg 180

gaacacaaca tgtgccaagg aaatgacaaa gctctctggc atctctgaaa tcatccccga 240

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ctctgcattc tccacaatcc atgtgacgcc cgaggacggt ttcagctatg ccaagttatg 360

aggttatggg cttggatccc actggtttgg cttatggnga ccttntcaaa aanggtcctt 420

cggngctttt gggcccctcg gaagnttt 448

<210> 552
<211> 384
<212> nucleic acid
<213> Zea mays

<400> 552

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ggacgttcat ctttcctggt gcacagccag ccccccacag gagcttctct gaggaagttg 180

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atccagcaag acctggacag aagtggcacg tcttctacgc cactgagtac ccagagcaac 300

caatggntaa ccttgagatg tgcatgactg gtctggacaa gaaagaaagc ttctgtcttt 360

ttcaaagact aaatgctgat ggga 384

<210> 553
<211> 469
<212> nucleic acid
<213> Zea mays

<400> 553

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ccacngatcc atgtgacgcc tgaggatggg ttcagctacg ccagttatga ggttatgggc 180

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ggaggtggga tcctcatcta ccaaagcttc ttgtgctgnt gaaanacccc gttgctagct 420

cgcccaaatc cggtcttcgc tgctttgaat ggcnaanaat gcaacancc 469

<210> 554
<211> 347
<212> nucleic acid
<213> Zea mays

<400> 554

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<210> 555
<211> 435
<212> nucleic acid
<213> Zea mays

<400> 555

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tggagatctg cgattntgac ttccnaccct gtggctactc catgaatgcg atccatggct 180

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agcngccttg angca 435

<210> 556
<211> 334
<212> nucleic acid

<213> Zea mays

<400> 556

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tcgtttggtt attctgtgaa gcagccaagc cagg 334

<210> 557
<211> 404
<212> nucleic acid
<213> Zea mays

<400> 557

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tgaagattgt catcaagacc tgtggcacta ccaagctcct gctcaccatt ccaagaatcc 180

ttgagcttgc tgaagagctg tctatgccac ttgctgctgt gaagtactcc cgtgggacgt 240

tcatctttcc tggcgcacag ccagcccccc acaggagctt ctctgaggaa gttgctgcac 300

ttaaccgcta ctttggcggc ctgaaatctg gtggtaatgc ttatgtgatt ggagatccag 360

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<210> 558
<211> 430
<212> nucleic acid
<213> Zea mays

<400> 558

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ctttctgagt caagcttgtt tatctatcct ctgaagattg tcatcaagac ctgtggcact 240

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cttgctgntg tgaaagtact cccgtgggga cgttcatctt tcctggcgca caagncaggn 360

ccccacaagg agcttntttt gaaggaagtt gcttgnactt taaccggtta atttgggggg 420

ccttgaaant 430

<210> 559
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 559

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gatggagatc tgcgattttg acttcgaacc ctgtggctac tccatgaatg cgatccatgg 180

ctctgcattc tccacaatcc atgtgacgcc cgaggacggt ttcagctacg ccagttacga 240

ggttatgggc ttggatgcca ctgctctgtc ttatggtgac cttgtcaaga gggtcctccg 300

gtgctttggc ccctcagag 319

<210> 560
<211> 346
<212> nucleic acid
<213> Zea mays

<400> 560

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ctttttcaag actaatgctg atgggaacac aacatgtgcc aaggaaatga caaagctctc 180

tggcatctct gaaatcatcn ttnagatgga gatctgcgat tttgacttcg aaccctgtgg 240

ctactccatg aatgcgatcc atggctctgc attctccaca atccatgtga cgcccgagga 300

cggtttcagt acgccattac gaggttatgg gcttggatgc catgct 346

<210> 561
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 561

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agcttgtgtc tttttcaaga ctaatgctga tgggaacaca acatgtgcca aggaaatgac 120

aaagctctct ggcatctctg aaatcatccc cgagatggag atctgcgatt ttgacttcga 180

accctgtggc tactccatga atgcgatcca tggctctgca ttctccacaa tccatgtgac 240

gcccgaggac ggtttcagct acgccagtta cgaggttatg ggcttggatg ccactgctct 300

gtcttatggt gaccttg 317

<210> 562
<211> 342
<212> nucleic acid
<213> Zea mays

<400> 562

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ttatggtgac cttgtcaaga gggtcctccg gtgctttggc ccctcggagt tttccgttgc 120

cgtgaccatc ttcggcgggc gtggccatgc cgggacatgg ggaaaggcac taggtgcaga 180

ggtctatgac tgcaacaaca tggtggagca ggagctgcct ggaggcgggc tcctcgtata 240

ccagagcttc tgcgctgctg aagacgctgt tgctacctcg cccaaatctg ttttccactg 300

ctttgacggc gagaacgtgg agagtgtcct cctcctatga ag 342

<210> 563
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 563

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tcctgataat cgaccagttc cccagtcttg ctccttgcac tcctccctcc atctccagca 180

ttgtgttctg attcacctgc tccaatggct gttctttctg ctgctgatgc ttccccggtc 240

tcagctatcg ggtttgaggg ctatgagaag cgccttgaga tcacattctc tgaggcacct 300

gtctttgtgg accc 314

<210> 564
<211> 541
<212> nucleic acid
<213> Zea mays

<400> 564

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aattcccggg tcgacccacg cgtccggcaa caacatggtg gagcaggagc tgcctggagg 120

cgggctcctc gtgtaccaga gcttctgtgc tgctgaagac gctgttgcta cctcgcccaa 180

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ggactacaaa ctggctaatc ttctatgctg ggaggaggaa ccggatgcca tggaggagaa 300

ggcgggagtg cttgatgagt aagacggnct tntggggtng atttgcttnt gagttgntta 360

ttttatatcg tngcaatttc cgtggntgtc gtttggttat tctgtgaagc agcnaancta 420

tgcttattgg tatnaaantt tgtcgtntgt aagcntgtgn actttntact gttnccannt 480

gcttggatta anttntnaat aattnaatat tntaattttn ntgtnntttt ttnttttntc 540

t 541

<210> 565
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 565

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tcaagactaa tgctgatggg aacacaacat gtgccaagga aatgacaaag ctctctggca 120

tctctgaaat catccccgag atggagatct gcgattttga cttcgaaccc tgtggctact 180

ccatgaatgc gatccatggc tctgcattct ccacaatcca tgtgacgccc gaggacggtt 240

tcagctacgc cagttacgag gttatgggct tggatgccac tgctctgtct tatggtgacc 300

ttgtcaag 308

<210> 566
<211> 346
<212> nucleic acid
<213> Zea mays

<400> 566

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tccagtctgc tgcttactcc aactgcgcga agaagccatc ctgatatccc ttttggcttc   120
cncattctag tagtttagga tttcttttct gacactttga ttctgaccaa tctctctggc   180
ctgctnttcc tgataatcga ccagttcccc agtcttgctc cttgcactcc tccctcctcc   240
atctccagca ttgtgttctg attcacctgc tccaatggct gttctttctg ctgctgatgc   300
ttccccggtc tcagctatcg ggttgagggc tatgagaagc gccttg                  346
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<210> 567
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 567

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acaggagctt ctctgaggaa gttgctgcac ttaaccgcta ctttggcggc ctgaaatctg   180
gtggtaatgc ttatgtgatt ggagatccag caagacctgg acagaagtgg cacgtcttct   240
acgccactga gtacccagag caaccaatgg ttaaccttga gatgtgcatg actggtctgg   300
aca                                                                 303
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<210> 568
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 568

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tgaccttgtc aagagggtcc tccggtgctt tggcccctcg gagttttccg ttgccgtgac   180
catcttcggc gggcgtggcc atgccgggac atggggaaag gcactaggtg cagaggtcta   240
tgactgcaac aacatggtgg agcaggagct gcctggaggc gggctcctcg tataccagag   300
cttctgcgct gctgaa                                                   316
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<210> 569
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 569

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ctgctcacca ttccaagaat ccttgagctt gctgaagagc tgtctatgcc acttgctgct 180

gtgaagtact cccgtgggac gttcatcttt cctggtgcac agccagcccc ccacaggagc 240

ttctctgagg aagttgctgc acttaaccgc tactttggcg gcctgaaatc tggtggtaat 300

gcttatgtga ttg 313

<210> 570
<211> 512
<212> nucleic acid
<213> Zea mays

<400> 570

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gacccacgcg tccgcggacg cgtgggcgat tcttaccaat ccccctggcc tgctgctttc 120

ctgataatcg accagttccc cagtcttgct ccctgcagtc ctccctcctc catctccagc 180

gttgtgttct gactcacctg caccaatggc tgttctttct gctgctggtg ctcccccggc 240

ctcagctatc gggtttgagg gctatgagaa gcgccttgag atcacattct ctgaggcacc 300

tgtctttgtg gacccccatg gcagcggttt gcgtgccctc tccaggtccc agattgactc 360

tgttctggat cttgcacggt gcacgatcgt gtccgagctc tccaacaagg attttgactc 420

ctatgttctc tccgagtcaa gcttgtcatc tatcctctga agattgncat caagacctgt 480

ggcactacca acttctggta caanttccag ga 512

<210> 571
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 571

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cttggctaca gcattgagga cgttcgacct gccggagngt gaagaagttc cagtctgctg 120

cttactccaa ctgcgcgaag aagccatcct gatatccctt ttggcttcct cattctagta 180

gtttaggatt tcttttctga cactttgatt ctgaccaatc tctctggcct gctgcttcct 240

gataatcgac cagttcccca gtcttgctcc ttgcactcct ccctcctcca tctccagcat 300

tgtgttctga ttca 314

<210> 572
<211> 422
<212> nucleic acid
<213> Zea mays

<400> 572

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gagggtcctt gggtgcttcg gcccctcgga attttctgtc gccgtgacca tcttcggcgg 120

gcggngccaa gctgggacat ggggaaagga acttggtgcg gaggcttatg actgcaacaa 180

catggtcgag caggagctgc ctggaggtgg gatcctcatc taccagagct tctgtgctgc 240

tgaagacgcc gttgctagct cgcccaaatc cgttcttcgc tgctttgatg gcgagaatgc 300

agcacctttt gcgaaggact gcaagctggc taatcttgtc tgcttggagg aagttggatg 360

ctatcgagga gaaagatgga gtgcttgatg agtaaaacng gtttcttggt gncgatttgc 420

tt 422

<210> 573
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 573

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gctacgccag ttacgaggtt atgggcttgg atgccactgc tctgtcttat ggtgaccttg 120

tcaagagggt cctccggtgc tttggcccct cagagttttc cgttgccgtg accatcttcg 180

gcgggcgtgg ccatgccggg acatggggaa aggcacttgg tgcagaggtc tatgactgca 240

acaacatggt ggagcaggag ctgcctggag gcgggctcct cgtgtaccag agctt 295

<210> 574
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 574

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gcacaattgt gtctgagctc tccaacaagg atttcgactc atatgtcctt tctgagtcaa 120

gcttgtttat ctatcctctg aagattgtca tcaagacctg tggcactacc aagctcctgc 180

tcaccattcc aagaatcctt gagcttgctg aagagctgtc tatgccactt gctgctgtga 240

agtactcccg tgggacgttc atctttcctg gcgcacagcc agccccccac aggag 295

<210> 575
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 575

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actaccaagc tcctgctcac cattccaaga atccttgagc ttgctgaaga gctgtctatg 120

ccacttgctg ctgtgaagta ctcccgtggg acgttcatct ttcctggtgc acagccagcc 180

ccccacagga gcttctctga ggaagttgct gcacttaacc gctactttgg cggcctgaaa 240

tctggtggta atgcttatgt gattggagat ccagcaagac ctggacagaa gtggcacgt 299

<210> 576
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 576

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ctgtggcact accaagctcc tgctcaccat tccaagaatc cttgagcttg ctgaagagct 120

gtctatgcca cttgctgctg tgaagtactc ccgtgggacg ttcatctttc ctggtgcaca 180

gccagccccc cacaggagct tctctgagga agttgctgca cttaaccgct actttggcgg 240

cctgaaatct ggtggtaatg cttatgtgat tggagatcca gcaagacctg gacagaagt 299

<210> 577
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 577

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aagcggatgc catggaggag aaggcgggag tgcttgatga gtaagacggg cttctggggt 120

cgatttgctt ctgagttgtt tattttatat cgtcgcaatt tcgtggttgt cgtttggtta 180

ttctgtgaag cagccaagcc aggctattgt tatgaaaatt tgtcgtctgt aagcatgtga 240

acttccgatg ttgccacatg ctggatcagt ctgaataagt aagtatgcag ctctagg 297

<210> 578
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 578

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actggtctgg acaagaagaa agcttgtgtc tttttcaaga ctaatgctga tgggaacaca 120

acatgtgcca aggaaatgac aaagctctct ggcatctctg aaatcatccc cgagatggag 180

atctgcgatt ttgacttcga accctgtggc tactccatga atgcgatcca tggctctgca 240

ttctccacaa tccatgtgac gcccgaggac ggtttcagct acgccagtta cgaggttatg 300

ggc 303

<210> 579
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 579

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ccgtgaccat cttcggcggg cgtggccatg ccgggacatg gggaaaggca cttggtgcag 180

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accagagctt ctgtgctgct gaagacgctg ttgctacctc gcccaaatct gttttccact 300

gctt 304

<210> 580
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 580

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acaaactggc taatcttcta tgctgggagg aggaagcgga tgccatggag gagaaggcgg 120

gagtgcttga tgagtaagac gggcttctgg ggtcgatttg cttctgagtt gtttatttat 180

atcgtcgcaa tttcgtggtt gtcgtttggt tatctgtgaa gcagccaagc caagctattg 240

ttatgaaaat tgtcgtctgt aagcatgtga acttccgacg ttgccacatg ctggatcatc 300

tgaataagta agtatgcagc tctaggtgtc agctgcgtct 340

<210> 581
<211> 344
<212> nucleic acid
<213> Zea mays

<400> 581

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cgagatggag atctgcgatt tgacttgaac cctgtggcta ctccatgaat gcgatccatg 120

gctctgcaat ctccacaatc catgtgacgc ccgaggacgg gttcagccaa gccagnaatg 180

aggctaaggg cctngaagcc actgctctgt cttatggtga ccttgtcaag agggtccttc 240

ggtgctttgg cccctcggag ttttccgttg ccgtgaccat cttcggcggg cgtggccatg 300

ccgggacatg gggaaangca ttggtgcaga ggtctatgac tgca 344

<210> 582
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 582

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cctccctcct ccatctccag cattgtgttc tgattcacct gctccaatgg ctgttctttc 120

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gatcacattc tctgaggcac ctgtctttgt ggaccctcat gggcgtggtt tgcgtgccct 240

ctccagggcc cagattgact ctgttctgga tcttgcacgg tgcacaattg tgtccgagct 300

<210> 583
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 583

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gctgaagagc tgtctatgcc acttgctgct gtgaagtact cccgtgggac gttcatcttt 180

cctggtgcac agccagcccc ccacaggagc ttctctgagg aagttgctgc acttaaccgc 240

tactttggcg gcctgaaatc tggtggtaat gcttatgtga ttggagatcc agcaagac 298

<210> 584
<211> 351
<212> nucleic acid
<213> Zea mays

<400> 584

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accgctactt tggcggcctg aaatctggtg gtaatgctta tgtgattgga gatccagcaa 180

gatctggaca gaagtggcac gtcttctacg ccactgagta cccagagcaa ccaatggtta 240

accttgagat gtgcatgact ggtctggaca agaagaaagc ttgtgtcttt tcaagactaa 300

tgctgatngg gaacacaaca tgtgcccaag gnaatgacna agctctctng c 351

<210> 585
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 585

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cgggacatgg ggaaaggcac ttggtgcaga ggtctatgac tgcaacaaca tggtggagca 120

ggagctgcct ggaggcgggc tcctcgtgta ccagagcttc tgtgctgctg aagacgctgt 180

tgctacctcg cccaaatctg ttttccactg ctttgacggc gagaacgtgg agagtgctcc 240

tcctcctatg aagaaggact acaagctggc taatcttctc tgctgggagg a 291

<210> 586
<211> 514
<212> nucleic acid
<213> Zea mays

<400> 586

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ccgggtcgac ccacgcgtcc gggagctgcc tggaggcggg ctcctcgtgt accagagctt 120

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cgagaacgtg gagagtgctc ctcctcctat gaagaaggac tacaagctgg ctaatcttct 240

ctgctgggag gaggaagcgg atgccatgga ggagaaggcg ggagtgcttg atgagtaaga 300

cgggcttctg gggtcgattt gcttctgagt tgtttatttt atatcgtngc aatttcntgg 360

ttgtcgttng gttattntgn ggaagnagnn aanccaggct attngtaatg aaaanntnnt 420

tnttntaata ntattaactt tnnnatnttn tcaanattct tgatnannnt tantaataan 480

ttatntaatn tntaaggtnt nannnttnnn ttnt 514

<210> 587
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 587

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gtgcatgact ggtctggaca agaagaaagc ttgtgtcttt ttcaagacta atgctgatgg 180

gaacacaaca tgtgccaagg aaatgacaaa gctctctggc atctctgaaa tcatccccga 240

gatggagatc tgcgattttg acttcgaacc ctgtggctat ccatgaatgc gatccatgg 299

<210> 588
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 588

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tacctcgccc aaatctgttt tccactgctt tgacggcgag aacgtggaga gtgctcctcc 120

tcctatgaag aaggactaca agctggctaa tcttctctgc tgggaggagg aagcggatgc 180

catggaggag aaggcgggag tgcttgatga gtaagacggg cttctggggt cgatttgctt 240

ctgagttgtt tattttatat cgtcgcaatt tcgtggttgt cgtttggt 288

<210> 589
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 589

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agtactcccg tgggacgttc atctttcctg gcgcacagcc agccccccac aggagcttct 180

ctgaggaagt tgctgcactt aaccgctact ttggcggcct gaaatctggt ggtaatgctt 240

atgtgattgg agatccagca agacctggac agaagtggca gtcttctacg ccactggagt 300

accca 305

<210> 590
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 590

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gtggccatgc cgggacatgg ggaaaggcac ttggtgcaga ggtctatgac tgcaacaaca 120

tggtggagca ggagctgcct ggaggcgggc tcctcgtgta ccagagcttc tgtgctgctg 180

aagacgctgt tgctacctcg cccaaatctg ttctccactg ctttgacggc gagaacgtgg 240

agagtgctcc tcctcctatg aagaaggact acaaactggc taatcttcta tgctg 295

<210> 591
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 591

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ctattgttat gaaaatttgt cgtctgtaag catgtgaact tccgatgttg ccacatgctg 180

gatcagtctg aataagtaag tatgcagctc taggtggtca gctgcgtcta ccacaatgag 240

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<210> 592
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<212> nucleic acid
<213> Zea mays

<400> 592

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gtctggtggc aatgcttatg tgattggaga tgcagcaaga ccaggacaga agtggcacat 180

ctactacgcc actgagtacc cagagcaacc aatggtcaac cttgagatgt gcatgactgg 240

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tgccaaggaa atgacgaagt 320

<210> 593
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 593

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tggtgacctt gtcaagaggg tcctccggtg ctttggcccc tcagagtttt ccgttgccgt 180

gaccatcttc ggcgggcgtg gccatgccgg gacatgggga aaggcacttg gtgcagaggt 240

ctatgactgc aacaacatgg tggagcagga gctgcctgga ggcg 284

<210> 594
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 594

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ctggcctgct gcttcctgat aatcgaccag ttccccagtc ttgctccttg cactcctccc 180

tccatctcca gcattgtgtt ctgattcacc tgctccaatg gctgttcttt ctgctgctga 240

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<210> 595
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 595

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tgatatccct tttggcttcc tcattctagt agtttaggat ttcttttctg acactttgat 180

tctgaccaat ctctctggcc tgctgcttcc tgataatcga ccagttcccc agtcttgctc 240

cttgcactcc tccctccatc tccagcattg tgttctgatt cacctg 286

<210> 596
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 596

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agtttaggat ttcttttctg acactttgat tctgaccaat ctctctggcc tgctgcttcc 180

tgataatcga ccagttcccc agtcttgctc cttgcactcc tccctccatc tccagcattg 240

tgttctgatt cacctgctcc aatggctgtt ctttctgctg ctgatgctt 289

<210> 597
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 597

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ggcacgtctt ctacgccact gagtacccag agcaaccaat ggttaacctt gagatgtgca 180

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caacatgtgc caaggaaatg acaaagctct ctggcatctc t 281

<210> 598
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 598

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ccacttgctg ctgtgaagta ctccccgtggg acgttcatct ttcctggtgc acagccagcc 180

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tctggtggta atgcttatgt gattggagat ccagcaagac ctgga 285

<210> 599
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 599

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gttttccgtt gccgtgacca tcttcggcgg gcgtggccat gccgggacat ggggaaaggc 120

acttggtgca gaggtctatg aactgcaaca acatggtgga gcaggagctg cctggaggcg 180

ggctcctcgt gtaccagagc ttctgtgctg ctgaagacgc tgttgctacc tcgcccaaat 240

ctgttttcca ctgctttgac ggcgagaacg tggagagtgc tcctcctcct at 292

<210> 600
<211> 346
<212> nucleic acid
<213> Zea mays

<400> 600

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ggcctgaaat ctggtggtaa tgcttatgtg attggagatc cagcaagacc tggacagaag 120

tggcacgtct tctacgccac tgagtaccca gagcaaccaa tggttaacct tgagatgtgc 180

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acagcatgtg ccaaggaaat gacaaagctc tctggcatct ctgaaatcat cccgagtgga 300

gnctgcgatt gntttgaccc tgtgctccaa atcaatgacn tgtttt 346

<210> 601
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 601

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tggtggtaat gcttatgtga ttggagatcc agcaagacct ggacagaagt ggcacgtctt 180

ctacgccact gagtacccag agcaaccaat ggttaacctt gagatgtgca tgactggtct 240

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<210> 602
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 602

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ccattccaag aatccttgag cttgctgaag agctgtctat gccacttgct gctgtgaagt 180

actcccgtgg gacgttcatc tttcctggtg cacagccagc cccccacagg agcttctctg 240

aggaagttgc tgcacttaac cgctactttg gcggcctgaa atctggtg 288

<210> 603
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 603

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cacctgctcc aatggctgtt ctttctgctg ctgatgcttc cccggtctca gctatcgggt 120

ttgagggcta tgagaagcgc cttgagatca cattctctga ggcacctgtc tttgtggacc 180

ctcatgggcg tggtttgcgt gccctctcca gggcccagat tgactctgtt ctggatcttg 240

cacggtgcac aattgtgtcc gagctctcca acaaggattt cga 283

<210> 604
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 604

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gatccagcaa gacctggaca gaagtggcac gtcttctacg ccactgagta cccagagcaa 120

ccaatggtta accttgagat gtgcatgact ggtctggaca agaagaaagc ttgtgtcttt 180

ttcaagacta atgctgatgg gaacacaaca tgtgccaagg aaatgacaaa gctctctggc 240

atctctgaaa tcatccccga gatggagatc tgcgat 276

<210> 605
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 605

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tttattttat atcgtcgcaa tttcgtggtt gtcgtttggt tattctgtga agcagccaag 120

ccaggctatt gttatgaaaa tttgtcgtct gtaagcatgt gaacttccga tgttgccaca 180

tgctggatca gtctgaataa gtaagtatgc agctctaggt ggtcagctgc gtctaccaca 240

atgagcatga acgtatggag aaatatctgt gaacccattt g 281

<210> 606
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 606

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tgagggctat gagaagcgcc ttgagatcac attctctgag gcacctgtct ttgtggaccc 120

ccatggcagc ggtttgcgtg ccctctccag gtcccagatt gactctgttc tggatcttgc 180

acggtgcacg atcgtgtccg agctctccaa caaggatttt gactcctatg ttctctccga 240

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cctgctcac 309

<210> 607
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 607

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acggtgcaca attgtgtctg agctctccaa caaggatttc gactcatatg tcctttctga 180

gtcaagcttg tttatctatc ctctgaagat tgtcatcaag acctgtggca ctaccaagct 240

cctgctcacc attccaagaa tccttgagct tgctga 276

<210> 608
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 608

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taagacgggc ttctggggtc gatttgcttc tgagttgttt attttcatat cgtcgcaatt 120

tcgtggttgt cgtttggtta ttctgtgaag cagccaagcc aggctattgt tatgaaaatt 180

tgtcgtctgt aagcatgtga acttccgatg ttgccacatg ctggatcagt ctgaataagt 240

aagtatgcag ctctaggtgg tcagctgcgt ctaccacaat ga 282

<210> 609
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 609

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atgggcttgg atgccactgc tctgtcttat ggtgaccttg tcaagagggt cctccggtgc 120

tttggcccct cagagttttc cgttgccgtg accatcttcg gcgggcgtgg ccatgccggg 180

acatggggaa aggcacttgg tgcagaggtc tatgactgca acaacatggt ggagcaggag 240

ctgcctggag gcgggctcct cgtgtaccag agtt 274

<210> 610
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 610

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gtggcaaaaa gtctagcagt agtcgttcta tgatgtatga agctcccctt ggctacagca 120

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cgcgaagaag ccatcctgat atcccttttg gcttcctcat tctagtagtt taggatttct 240

tttctgacac tttgattctg accaatctct ctggcctgcn gcttcc 286

<210> 611
<211> 324
<212> nucleic acid
<213> Zea mays

<400> 611

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cntttcaaga ctaatgctga tgggaacaca acatgtgcca aggaaatgac aaagctctct 120

ggcatctctg aaatcatccc cgagatggag atctgcgatt ntgacttcga accctgtggc 180

tactccatga atgcgatcca tgggnnnnng aactccacaa tccatgtgac gcccgaggac 240

ggtttcagct acgccagtta cgaggttatg ggctggatgc cactgctctg ctatggtgac 300

ctgtcaagag ggncctccgg tgct 324

<210> 612
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 612

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tccagggccc agatgactct gttctggatc ttgcacggtg ca 282

<210> 613
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 613

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tctttttcaa gactatgctg atgggaacac nacatgtgc 279

<210> 614
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 614

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cgccttgaga tcacattctc tgaggcacct gtctttgtgg accctcatgg gcgtggtttg 120

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tatcctctga agattgtcat caagacctgt ggcactac 278

<210> 615
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 615

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accttcgccc aaatctgtat tccactgctt tgacggcgag aacgtggaga gtgctcctcc 120

tcctatgaag aaggactaca agctggctaa tcttctctgc tgggaggagg aagcggatgc 180

catggaggag aaggcgggag tgcttgatga gtaagacggg cttctggggt cgatttgctt 240

ctgagttgtt tattttatat cgtcgcaatt tcgtggttg 279

<210> 616
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 616

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tggcaccgtc ttctacncca ctgaagtacc canagcaaac caatggttaa ccttgagatg 360

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<211> 277
<212> nucleic acid
<213> Zea mays

<400> 617

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tttgactttg aaccctgtgg ctactccatg aatgcgatcc atggctctgc attctctaca 180

atccatgtga cgcccgagga cggtttcagc tatgccagtt acgaggttat gggcttggat 240

gccactgctc tatcttatgg tgaccttgtc aagaggg 277

<210> 618
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<212> nucleic acid
<213> Zea mays

<400> 618

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gtttatttta tatcgtcgca atttcgtggt tgtcgtttgg ttaatctgtg aagcaccaaa 300

ccaagctatt gttaagaaaa tttntcctcc ggtaaccagt nnaacttcca aagttccaaa 360

ngcngggntt atcccnaaaa attnntntnc nncccccacg gnggggcanc tgctntntca 420

aanatgagca tgaacttttg gggaaaaaan atnttgggng cccannttttt ttt 473

<210> 619
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 619

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tctgagtcaa gcttgtttat ctatcctctg aagattgtca tcaagacctg tggcactacc 120

aagctcctgc tcaccattcc aagaatcctt gagcttgctg aagagctgtc tatgccactt 180

gctgctgtga agtactcccg tgggacgttc atctttcctg gcgcacagcc agccccccac 240

aggagcttct ctgaggaagt tgct 264

<210> 620
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 620

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cgaggttatg ggcttggatg ccactgctct atctt 275

<210> 621
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 621

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attgtcatca agacctgtgg cactac 266

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<211> 278
<212> nucleic acid
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<400> 622

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ccgttgccgt gaccatcttc ggcgggcgtg gccatgccgg gacatgggga aaggcactag 180

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tcgtatacca gagcttctgc gctgctgaag acgctgtt 278

<210> 623
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 623

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caactgcggc gaagaagcca tcctgatatc ccttttggct tcctcattct agtagtttag 240

gattctttct gacactttga ttctgaccaa tctctctggc ctgctgttcc ggataatcga 300

ccagttcc 308

<210> 624
<211> 402
<212> nucleic acid
<213> Zea mays

<400> 624

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tgcgtgccct ttncagggcc nagattgact ctgttntgga tcttgnacgt nttcacannt 300

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nnnntttaan ttnnttntat nnttttntnt tantaattnn tt 402

<210> 625
<211> 407
<212> nucleic acid
<213> Zea mays

<400> 625

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gtaccananc ttntgngctn ntnaanacnc tnnnnnnann nnnnnna 407

<210> 626
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 626

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ctcattctag tagtttagga tttcttttct gacactttga ttctgaccaa tctctctggc 180

ctgctgcttc ctgataatcg accagttccc cagtcttgct ccttgcactc ctccctccat 240

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ggaggaagcg gatgccatgg aggagaaggc gggagtgctt gatgagtaag acgggcttct 240

ggggtcgatt tgctctgagt tgtttattta tatcgtcgca attcgtggtt gt 292

<210> 628
<211> 311
<212> nucleic acid

<213> Zea mays

<400> 628

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gcgccttgag atcacattct ctgaggcacc tgtctttgtg gacccccatg gcagcggttt 180

gcgtgccctc tccaggtccc agattgactc tgttctggat cttgcacggt gcacgatcgt 240

gtccgagctc tccaacaagg attttgactc ctatgttctc tccgagtcaa gcttgttcat 300

ctatcctctg a 311

<210> 629
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 629

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nttattttat atcgtcgcaa tttcncggtt gtcgtttngt tattctgtga agcagccang 120

ccaggctatt gttatgaaaa tttgtcgtct gtaagcatgt gaacttccga tgttgccaca 180

tgctggatca gtctgaataa gtaagtatgc ngctctaggt ggtcagctgc gtctnccaca 240

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<210> 630
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 630

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tcttctctgc tggnaggagg aagcggatgc catggaggag aaggcgggag tncttgatga 180

gtaagacggg cttctggtgt cgatttgctt ctgagttgtt tattttatat cgtcgcaatt 240

tcgtggttgt cgtttggtta ttctgtgaag ca 272

<210> 631

<211> 263
<212> nucleic acid
<213> Zea mays

<400> 631

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agtactcccg tgggacgttc atctttcctg gcgcacagcc agccccccac aggagcttct 180

ctgaggaagt tgctgcactt aaccgctact ttggcggcct gaaatctggt ggtaatgctt 240

atgtgattgg agatccagca aga 263

<210> 632
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 632

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tttgactttg aaccctgtgg ctactccatg aatgcgatcc atggctctgc attctccaca 180

atccatgtga cgcccgagga cggtttcagc tatgccagtt atgaggttat gggcttggat 240

gccactgctc tgtcttatgg tgaccttgtc aa 272

<210> 633
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 633

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gtttgcgtnc cctctccagg gcccagattg nctntgttct ggatcttgca cggtgcacaa 180

tgtgtctgag ctctccaaca aggatttcga ctcatatgtc ctttctgagt caagcttgtt 240

tatctatcct ctgaagattg tcatcaagac ctgtncatac cangctcctg ctcac 295

<210> 634

<211>   292
<212>   nucleic acid
<213>   Zea mays

<400>   634

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atctttcctg gcgcacagcc agccccccac aggagcttct ctgaggaagt tgctgcactt 180

aaccgctact ttggcggcct gaaatctggt ggtantgctt atgtgattgg agatccagca 240

agacctggtc agaantggca cgtcttacta cgccactgag taaccagagc aa   292

<210>   635
<211>   270
<212>   nucleic acid
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<400>   635

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ctgctgctta ctccaactgc gcgaagaagc catcctgata tccctttgg cttcctcatt 180

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cttcctgata atcgaccagt tccccagtct   270

<210>   636
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<212>   nucleic acid
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cttcctcatt ctagtagttt aggatttctt ttctgacact ttgattctga ccaatctctc 180

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ccatctccag cattgtgttc tgattcacct   270

<210>   637

<211> 267
<212> nucleic acid
<213> Zea mays

<400> 637

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ctccaatggc tgttctttct gctgctgatg cttccccggt ctcagctatc gggtttgagg 120

gctatgagaa gcgccttgag atcacattct ctgaggcacc tgtctttgtg gaccctcatg 180

ggcgtggttt gcgtgccctc tccagggccc agattgactc tgttctggat cttgcacggt 240

gcacaattgt gtccgagctc tccaaca 267

<210> 638
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 638

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aggactacaa gctggctaat cttctctgct gggaggagga agcggatgcc atggaggaga 180

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attttatatc gtcgcaattc gtggntgtcg ttggttattc t 281

<210> 639
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 639

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gtctttttca agactaatgc tgatgggaac acaacatgtg ccaaggaaat gacaaagctc 180

tctggcatct ctgaaatcat ccccgagatg gagatctgcg attttgactt cgaaccctgt 240

ggctactcca tgaatgcga 259

<210> 640

<211> 298
<212> nucleic acid
<213> Zea mays

<400> 640

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gagctctcca acaaggattt tgacncctat gttctctccg agtcaagctt gttcatctat 180

cctctgaaga ttgtcatcaa gacctgtggc actaccaagc tcctgctcac aattccaagg 240

atcctagagc ttgctgaaga gctgtctatn cctcttgctg ctgtgaagta ctcccgcg 298

<210> 641
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 641

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gacctggaca gaagtggcac gtcttctacg ccactgagta cccagagcaa ccaatggtta 120

accttgagat gtgcatgact ggtctggaca agaagaaagc ttctgtcttt tnccaagact 180

aatgctgatg ggaacacagc atgtgccaag gaaatgacaa agctctctgg catctctgaa 240

atcatccccg agatggagat ctgcgatttt g 271

<210> 642
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 642

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ggtgcacagc cagcccccca caggagcttc tctgaggaag ttgctgcact taaccgctac 180

tttggcggcc tgaaatctgg tggtaatgct tatgtgattg gagatccagc aagacctgga 240

cagaagtggc acgtcttcta cgccactgag t 271

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gcctggaggc gggctcntcg tgtaccagag cttctgtgct gctgaagacg ctgttgctac 180

ctcgcccaaa tctgttttcc actgctttga cggcgagaac gtggagagtg ctcctcctcc 240

tatgaagaag gactacaagc tggctaatct tct 273

<210>	644
<211>	257
<212>	nucleic acid
<213>	Zea mays

<400>	644

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tgctttggcc cctcagagtt ttccgttgcc gtgaccatct tcggcgggcg tggccatgcc 120

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gagctgcctg gaggcgggct cctcgtgtac cagagcttct gtgctgctga agacgctgtt 240

gctacctcgc ccaaatc 257

<210>	645
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<212>	nucleic acid
<213>	Zea mays

<400>	645

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aagctcctgc tcaccattcc aagaatcctt gagcttgctg aagagctgtc tatgccactt 180

gctgctgtga agtactcccg tgggacgttc atctttcctg gtgcacagcc agccccccac 240

aggagcttct ctgaggaagt tgctgcactt aaccgctatt tggggcctga aatctggtgg 300

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<210> 646
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 646

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ccaggctatt gttatgaaaa tttgtcgtct gtaagcatgt gaacttccga tgttgccaca 180

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atgagcanng acntnntgga gaaatatctg tgaacccc 278

<210> 647
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 647

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cctcctatga agaaggacta caagctggct aatcttctct gctgggagga ggaagcggat 180

gccatggagg agaaggcggg agtgcttgat gagtaagacg ggcttctggg gtcgatttgc 240

ttctgagttg ttaattt 257

<210> 648
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 648

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cgggagtgct tgatgagtaa gacgggcttc tggggtcgat ttgcttctga gttgtttatt 240

ttatatcgtc gcaatttcg 259

<210> 649
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 649

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aagacgctgt tgctacctcg cccaaatctg ttttccactg ctttgacggc gagaacgtgg 240

agagtgctcc tcctcctat 259

<210> 650
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 650

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gagctgcctg gaggcgggct cctcgtgtac cagagcttct gtgctgctga agacgctgtt 240

gctacctcgc ccaaat 256

<210> 651
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<212> nucleic acid
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<400> 651

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agttatgagg ttatgggctt ggatgccact gctctgtctt atggtgacct tgtcaagagg 240

gtccttcggt gctttggccc ctcggag 267

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<211> 531
<212> nucleic acid
<213> Zea mays

<400> 652

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ccacgcgtcc ggttgccaaa gaattccctc ccctagccgc cgccgccgct cgtctccctg 120

agaggtgccg ggaccgagga tttggccgag ttctaggtag agaatcggtt ttacttgtct 180

cagcccgggg tctgctgcgt ctggtggtgg tgaaggggag aaattcgtga gatctgttcc 240

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tgaagctccc cttggctaca gcattgagga cgttcgacct gcccggaggc gtgaagaagt 420

tccagtctgc tgcttactcc aactgcgcga agaagccatc ctgatatccc ttttggcttc 480

ctcattctag tagtttagga tttcttttct gacactttga ttctgaccaa a 531

<210> 653
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 653

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gcattgtgtt ctgattcacc tgctccaatg gctgttctt 279

<210> 654
<211> 488
<212> nucleic acid
<213> Zea mays

<400> 654

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caacaacatg gtggagcang agctgcctgg aggcgggctc ctcntgtacc aaagctttgt 180

nctgntgaag acgcngttgc tanctcgccc aaatccgttt tccantgntt tgacnggaaa 240

acnttganaa tnctcctcct cctangaaga aagantacaa actggntaat cttctanctg 300

ggangaggaa acngattccn nggnngagaa agcgggagtg cctgatnngt attaaggntt 360

ctggggncna ttttcgtctn agttngtann ttttaagcnt cccaanattc cccgggtgtc 420

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nccgnnng 488

<210> 655
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 655

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caccattcca agaatccttg agcttgctga agagctgtct atgccacttg ctgctgtgaa 240

gtactcccgt gg 252

<210> 656
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 656

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ttgctgtact taaccgatac tttgggggcc tgaagtctgg tggcaatgct tatgtgattg 120

gagatgcagc aagaccagga cagaagtggc acatctacta cgccactgag tacccagagc 180

aaccaatggt caaccttgag atgtgcatga ctggtctgga cacgaagaaa gcttcagtct 240

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<211> 250
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<400> 657

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gaagagctgt ctatgccact tgctgctgtg aagtactccc gtgggacgtt catctttcct 120

ggcgcacagc cagcccccca caggagcttc tctgaggaag ttgctgcact taaccgctac 180

tttggcggcc tgaaatctgg tggtaatgct tatgtgattg gagatccagc aagacctgga 240

cagaagtggc 250

<210> 658
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<212> nucleic acid
<213> Zea mays

<400> 658

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atgtcctttc tgagtcaagc ttgtttatct atcctctgaa gattgtcatc aagacctgtg 180

gcactaccaa gctcctgctc accattccaa gaatccttga gcttgctgaa gagctgtcta 240

tgccacttgc tgctgtgaag t 261

<210> 659
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<213> Zea mays

<400> 659

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actaatgctg atgggaacac aacatgtgcc aaggaaatga caaagctctc tggcatctct 180

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<211> 454
<212> nucleic acid
<213> Zea mays

<400> 660

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gcgtctggtg gtggtgaagg ggagaaattc gtgagatctg ttccggatca ggcgtgcgag 180

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tctaagggtg gcaaaaagtc tagcagtagt cgttccatga tgtatgaagc tcccettggc 300

tacagcattg aggacgttcg acctgccgga ggcgtgaaga agttccagtc tgctgcttac 360

tccaactgcg cgaagaagcc atcctgatat cccttttggc ttcctcattc tagtaagttt 420

aggatttctt ttctgacact ttgattctga ccca 454

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<211> 248
<212> nucleic acid
<213> Zea mays

<400> 661

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actggtctgg acaagaagaa agcttgtgtc tttttcaaga ctaatgctga tgggaacaca 240

acatgtgc 248

<210> 662
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 662

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atgaggttat gggcttggat gccactgccc tgtcttacgg tgaccttgtc aagagggtcc 180

ttgggtgctt cggcccctcg gaattttctg tcgccgtgac catcttcggc gggcggggcc 240

aagctgggac atggggaaag gaacttggtg cggaggctta tgactgcaac aacat 295

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<400> 663

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ggggtcg 247

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tgagatgtgc atgactggtc tggacaagaa gnnagcttgt ggtcttttca agactaatgc 240

tgatgggaac acaa 254

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<400> 665

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tctgtgctgc tga 253

<210> 666
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 666

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gtaatgctta tgtgattgga gatccagcaa gacctggaca gaagtggcac gtcttctacg 180

ccactgagta cccagagcaa ccaatggtta accttgagat gtgcatgact ggtctggaca 240

agaagaaa 248

<210> 667
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 667

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ctttgtggac cctcatgggc gtggtttgcn tgccctctcc agggcccaga ttgactctgt 180

tctggatctt gcacggtgca caattgtgtc tgagctctcc aacaaggatt cgatcatagt 240

ccttnctgan tnagcttgtt taactatcct ctgaagatgt catcaagact g 291

<210> 668
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 668

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ngagtaccca gagcaaccaa tggttaacct tgagatgtgc atgactggtc tggacaagaa 120

gaaagcttgt gtctttttca agactaatgc tgatgggaac acaacatgtg ccaaggaaat 180

gacaaagctc tctggcatct ctgaaatcat ccccgagatg gagatctgcg attttgactt 240

cgaaccc 247

<210> 669
<211> 445
<212> nucleic acid
<213> Zea mays

<400> 669

ctcccctagc cgccgccncc gctcgtctnt ntgngaggtg ccgggaccga ggatttggnn 60

gagttctagg tagagaatcg gntttacttg tctcagcccg gggtctgctg cgtctggtgg 120

tggtgaaggg gagaaattcg tgagatctgt tccggatcag gcgtgcgagc tcgggaatca 180

ggggtttcac acatagcttc gtcgatttga atttgatgta ctaatggagt ctaagggtgg 240

caaaaagtct agcagtagtc gttctatgat gtatgaagct ccccttggct acagcattga 300

ggacnttcga cctgccngag gcgtgaaaaa nttccagtct gntgcttact ncaactgnnc 360

naaaaaacca tnctgatatc ccttttggct tcctcattct agtagtttaa gatttctttt 420

ctgacacttt gattctgacc aatct 445

<210> 670
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 670

ttgtgttctg attcacctgc tccaatggct gttctttctg ctgctgatgc ttccccggtc 60

tcanctatcg ggtttgaggg ctatgagaag cgccttgaga tcacattctc tgaggcacct 120

gtcttgtgga ccctcatggg cgtggtttgn gtgcnctctc cagggnccag attgactctg 180

ttctggatct tgcacggtgc acaatgtgtc cgagctctcc aacaaggatt tcgactcana 240

tgtcctcctc tgagtcaagc ntgtntatct atccnc 276

<210> 671
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 671

tctaagggtg gcaagaagtc tagcagtagt cgttccatga tgtatgaagc tccccttggc 60

tacagcattg aggacgttcg acctgccgga gggcgaagaa gttccagtct gctgcttact 120

ccaactgcgc aaagaagcca tcctgatatc ccttttggnt tcctcgttct agtagtttag 180

gatttctttt ctgacacttc gnttcttacc aatcccctg gcctgctgct ttcctgacaa 240

tcgaccagtt ccccagtctt gctccctgca gtcctccctc ctc 283

<210> 672
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 672

gacactttga ttctgnncca atctctctgg cctgctgctt cctgataatc tnnccagttt 60

ccccagtctt gctccttnga gctcctccct ccatctccag cattgtgttc tgattcacct 120

gctccaatgg ctgttctttc tgctgctgat gttccccggt ctcagctatc gggtttgagg 180

gctatgagaa gcgccttgag atcacattct ctgaggcacc tgtctttgtg gaccctcatg 240

ggcgtggttt gcgtgccctc tcaagggccc agattgactc tgtt 284

<210> 673
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 673

ggaggaagcg gatgccatgg angagantgc gggagtgctt gatgagtaag acggacnggn 60

gaggtgcgat ttgcttctga gttggttatt ttatatcgtc gcaatttcgt ggttgtcgtt 120

tggttattct gngaagcanc caagccaggc tattgntatg aaaatttgtc gtntgtaagc 180

atgtgaactt ncgatgttgc cacatgctgg atcagtctga ataagtaagt atgcagctct 240

aggtggtcag ntgngtntac cacaatgagc atgaactgta tggagaaata tntgtgaacc 300

cattttggnt atgaattaca annngctttt tngaaaaaan aatactggcg gnntntgttc 360

aanaaatggt tttgagcttt nnctttngta tctttttga agaaccggtc taattgacgc 420

ttaaattcnc atggagtggt naa 443

<210> 674

<211> 254
<212> nucleic acid
<213> Zea mays

<400> 674

ccgttgccgt gaccatcttc ggcgggcgtg gccatgccgg gacatggggt naggcacttg 60

gtgcagaggt ctatgactgc aacaacatgg tggagcagga gctgcctgga ggcgggctcc 120

tcgtgtacca gagcttctgt gctgctgaag acgctgttgc tacctcgccc aaatctgttt 180

tccactgctt tgacggcgag aacgtggaga gtgctcctcc tcctatgaag aaggatacaa 240

gctggctaat cttc 254

<210> 675
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 675

ctgaagtctg gtggcaatgc ttatgtgatt ggagatgcag caagaccagg acagaagtgg 60

cacatctact acgccactga gtacccagag caaccaatgg tcaaccttga gatgtgcatg 120

actggtctgg acacgaagaa agcttcagtc ttcttcaaga ctaatgctga tggcaacaca 180

acatgtgcca aggaaatgac gaagctctct ggtatctctg aaattatccc tgagatggag 240

atctgtgatt ttgacttcga accctgcggc ta 272

<210> 676
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 676

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caatggttaa ccttgagatg tgcatgactg gtctggacaa gaagaaagct tgtgtctttt 120

tcaagactaa tgctgatggg aacacaacat gtgccaagga aatgacaaag ctctctggca 180

tctctgaaat catccccgag atggagatct gcgattttga cttcgaaccc tgtggctact 240

<210> 677
<211> 243
<212> nucleic acid

<213>	Zea mays

<400>	677

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aggagcttct ctgaggaagt tgctgcactt aaccgctact ttggcggcct ganatctggt 120

ggtaatgctt atgtgattgg agatccagca agacctggac agaagtggca cgtcttctac 180

gccactgagt acccagagca accaatggtt aaccttgaga tgtgcatgac tggtctggac 240

aag 243

<210>	678
<211>	243
<212>	nucleic acid
<213>	Zea mays

<400>	678

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accatcttcg gcgggcgtgg ccatgccggg acatggggaa aggcacttgg tgcagaggtc 120

tatgactgca acaacatggt ggagcaggag ctgcctggag gcgggctcct cgtgtaccag 180

agcttctgtg ctgctgaaga cgctgttgct acctcgccca aatctgtttt ccactgcttt 240

gac 243

<210>	679
<211>	251
<212>	nucleic acid
<213>	Zea mays

<400>	679

ggggtttcac acatagcttc gtcgatttga atttgatgta ctaatggagt ctaagggtgg 60

caaaaagtct agcagtagtc gttctatgat gtatgaagct ccccttggct acagcattga 120

ggacgttcga cctgccggag ggtgaagaag ttccagtctg ctgcttactc caactgcgcg 180

aagaagccat cctgatatcc cttttggctt cctcattcta gtagtttagg atttcttttc 240

tgacactttg a 251

<210>	680
<211>	268
<212>	nucleic acid

<213> Zea mays

<400> 680

cacaattcca aggatcctag agcttgctga agagctgtct atgcctcttg ctgctgtgaa 60

gtactcccgc gggacgttca tctttcctgg cgcacagcca gccccccacc ggagcttctc 120

cgaggaagtt gctgtactta accgatactt tgggggcctg aagtctggtg gcaatgctta 180

tgtgattgga gatgcagcaa gaccaggaca gaagtggcac atctactacg ccactgagta 240

cccagagcaa ccaatggtca accttgag 268

<210> 681
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 681

gctgatggga acacagcatg tgccaaggaa atgacaaagc tctctggcat ctctgaaatc 60

atccccgaga tggagatctg cgattttgac tttgaaccct gtggctactc catgaatgcg 120

atccatggct ctgcattctc cacaatccat gtgacgcccg aggacggttt cagcnatgcc 180

agttatgagg ttatgggctt ggatgccact gctctgtctt atggtgacct tgtcaagagg 240

gtccttcgg 249

<210> 682
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 682

gccacttgct gctgtgaagt actcccgtgg gacgttcatc tttcctggtg cacagccagc 60

cccccacagg agcttctctg aggaagttgc tgcacttaac cgctactttg gcggcctgaa 120

atctggtggt aatgcttatg tgattggaga tccagcaaga cctggacaga agtggcacgt 180

cttctacgcc actgagtacc cagagcaacc aatggttaac cttgagatgt gcatgactgg 240

t 241

<210> 683
<211> 268
<212> nucleic acid

<213> Zea mays

<400> 683

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tctggcatct ctgaaataca tccccgagat ggagatctgc gattttgact tcgaaccctg 120

tggctactcc atgaatgcga tccatggctc tgcattctcc acaatccatg tgacgcccga 180

ggacggtttc agctacgcca gttacgaggt tatgggctnt anttgccatg ctctgtctta 240

tggtgacctt gtcaagaggt cctccggt 268

<210> 684
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 684

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ctacaaacta gctaatcttc tctgctgnnn ggaggaagcg gatgccatgg aggagaaggc 120

gggagtgctt gatgagtaag acgggcttct ggtgtcgatt tgcttctgag ttgtttattt 180

tatatcgtcg cnatttcgtg gttgtcgttt ggttatctgt gaagcagcca agccaggcta 240

ttgttatgaa aattgtcgtc tgta 264

<210> 685
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 685

agcaagacct gggacagaag tggcacnntc ttctacgcca ctgagtaccc agagcaacca 60

atggttaacc ttgagatgtg catgactggt ctggacaaga agaaagcttg tgtctttttc 120

aagactaatg ctgatgggaa cacaacatgt gccaaggant ganaancctc tctggcatct 180

ctgaaatcat ccccgagatg gagatctgcg attttgactt cgaaccctgt ggctactcca 240

tgaatgcgat ccatggctct gcattctc 268

<210> 686
<211> 332
<212> nucleic acid

<213> Zea mays

<400> 686

ttttccctgc tttgacggcg agcaacgtgg anagtgctct ncctcctatg aagaangnct 60

acanactggc taatcttcta tnctnggacg nnganncgga tgcccatggn aggagaaggc 120

gggagtgctt gatgagtaan acgggcttct ggggtcgatt tgcttctgag ttgtttattt 180

tatatcgtcg caatttcgtg gttgtcgttt ngttattctg tgaagcagcc aagccaagct 240

attgttatga nntttgtcgt ctgtaagcat gtgacttccg ccgttgccac atgctggatc 300

agtctgaata gtaagtngca gctctagtgg nc 332

<210> 687
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 687

gaagcggatg ccatggngga gaaggcggga gtgcttgatg agtaagacgg gcttctgggg 60

tcgatttgct tctgagttgt ntattttata tcgtcgcaat ttcgtggttg tcgtttggtt 120

attctgtgaa gcagccaagc caggctattg ttatgaaaat ttgtcgtctg taagcatgtg 180

aacttccgat gttgccacat gctggatcag tctgaataag taagtatgca gctctag 237

<210> 688
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 688

cagcattgtg ttctgattca cctgnctcca atggctgttg ctttctgctg ctgatgcttc 60

cccggtctca gctatcgggt ttgagggcta tgagaagcgc cttgagatca cattctctga 120

ggcacctgtc tttgtggacc ctcatggcgt ggtttgcgtg ccctctccag ggcccagatt 180

gactctgttc tggatcttgc acggtgcaca atgtgtccga gctctccaac aaggatttcg 240

actcatagtc ctctctgagt caagcttgtt tatctatctc tgaaga 286

<210> 689
<211> 300
<212> nucleic acid

<213> Zea mays

<400> 689

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actaatggag tctaagggtg gcaaaaagtc tagcagtagt cgttctatga tgtatgangc 120

tccccttggc tacagcnttg aggacgttcg acctgccgga cggtgaagaa gttccagtct 180

gctgcttact ccaagtgcgc gangaagcca tcctgatatc cttttggctt ccctcattct 240

agtagtttan gatttcnttt ctgacacttt gattntgacc antctctnct gggcttgntg 300

<210> 690
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 690

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gggggctgg ctgtgcacca ggaaagatga acgtcccang ggagtacttc acagcagcna 120

gtggcataga cagctcttca gcaagctcaa ggattcttgg aatggtgagc aggacttggt 180

agtgccacag gtcttgatga caatcttcag aggatagatn aacaagcttg actcatagag 240

gacatatgat ccgaaatcct tgtggagagc tcgacaca 278

<210> 691
<211> 525
<212> nucleic acid
<213> Zea mays

<400> 691

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tcgacccacg cgtccgcaaa gaattccctc ccctagccgc cgccgccgcc gctcgtctcc 120

ctgagaggtg ccgggaccga ggaactggcc gagtactagg tagagaatcg gtttttcttg 180

tctcagcccg gggtctgctg cgtctggtgg tggtgaaggg gagaaattcg tgagatctgt 240

tccggatcag gcgtgcgagc tcgggaatca ggggtttcac acatagcttc gtcgatttga 300

atttgatgta ctaatggagt ctaagggtgg caaaaagtct agcagtagtc gttctatgat 360

gtatgaagct ccccttggct acagcattga ggacgttcga cctgccggag gcgtgaagaa 420

gttccagtct gctgcttact ccaactgcgc gaagaaccat cctgatatcc cttttggctt 480

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<210> 692
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 692

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acacaacatg tgccaaggaa atgacaaagc tctctggcat ctctgaaatc atccccgaga 120

tggagatctg cgattttgac ttcgaaccct gtggctactc catgaatgcg atccatggct 180

ctgcattttc aaaatccatg tgacgcccga ggacggtttc agctacgcca gttacgaggt 240

ta 242

<210> 693
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 693

caaatcttat tcataaacaa aatgggttca cagatatttc tccatacgta catgctcatt 60

gtggtagacg cagctgacca cctagagctg catacttact tattcagact gatccagcat 120

gtggcaacgt cggaagttca catgcttaca gacgacaaat tttcataaca atagcttggc 180

ttggctgctt cacagaataa ccaaacgaca accacgaaat tgcgacgata taaaataa 238

<210> 694
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 694

cgctactttg gcggcctgaa atctggtggt aatgcttatg tgattggagn tccagcaaga 60

cctggacaga ngtggcacgt cttctacgcc actgagtacc cagagcaacc aatggttaac 120

cttganatgn gcatgactgg tctggacnag nagaangctt gtgtcttttt caagantaat 180

gctgatgggn acacnacatg tgccaaggga atgacnaagc tcnctggcat ctcngaaagc 240

ntncccgnga tggannntgc gnt 263

<210> 695
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 695

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cggagttttc cgttgccgtg accatcttcg gcgggcgtgg ccatgccggg acatggggaa 120

aggcacttgg tgcagaggtc tatgactgca acaacatggt ggagcaggag ctgcctggag 180

gcgggctcct cgtgtaccag agcttctgtg ctgctgaaga cgctgttgct actcgcccaa 240

atctg 245

<210> 696
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 696

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atcacattct ctgaggcacc tgtctttgtg gaccctcatg ggcgtggttt gcgtgccctc 120

tccagggccc agattgactc tgttctggat cttgcacggt gcacaattgt gtctgagctc 180

tccaacaagg atttcgactc atatgtcctt tctgagtcaa gcttgttta 229

<210> 697
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 697

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actgcaacaa catggtggag caggagctgc ctggaggcgg gctcctcgtg taccagagct 120

tctgtgctgc tgaagacgct gttgctacct cgcccaaatc tgttttccac tgctttgacg 180

gcgagaacgt ggagagtgct cctcctccta tgaagaagga ctacangc 228

<210> 698

<211> 227
<212> nucleic acid
<213> Zea mays

<400> 698

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tgctgaagac gctgttgcta cctcgcccaa atctgttttc cactgctttg acggcgagaa 120

cgtggagagt gctcctcctc ctatgaagaa ggactacaag ctggctaatc ttctctgctg 180

ggaggaggaa gcggatgcca tggaggagaa ggcgggagtg cttgatg 227

<210> 699
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 699

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ccacgatcca tgtgacgcct gaggatgggt tcagctacgc cagttatgag gttatgggct 120

tggatgccac tgccctgtct tacggtgacc ttgtcaagag ggtccttggg tgcttcggcc 180

cctcggaatt ttctgtcgcc gtgaccatct tcggcgggcg gggccaagct gggacatggg 240

gaaaggaatt ggtgcggagg cttatgactg caaca 275

<210> 700
<211> 497
<212> nucleic acid
<213> Zea mays

<400> 700

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gggtcgaccc acgcgtccgc caaagaattc cctcccctac cgccgtcgcc gctcgtctcc 120

ctgagaggtg ccgggaccga ggaactggcc gagttctagg tagagaatcg gttttgcttg 180

tctcagcacg gggtctgctg cgtctggtgg tggtgaaggg gagaaattcg tgagatctgt 240

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gtatgaagct ccccttggct acagcattga ggacgttcga cctgccggag gcgtgaagaa 420

gttccagtct gctgcttact ccaactgcgc gaagaagcca tcctgatatc ccttttggct 480

tcctcattct agtagtt 497

<210> 701
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 701

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tctaagggtg gcaaaaagtc tagcagtagt cgttctatga tgtatgaagc tccccttggc 120

tacagcattg aggacgttcg acctgccgga gggtgaagaa gttccagtct gctgcttact 180

ccaactgcgc gaagaagcca tcctgatatc ccttttggct tcctcattct agtagtttag 240

gatt 244

<210> 702
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 702

gncgtgcgag ctcgggaatc aggggtttca cacatagctt cgtcgatttg aatttnatgt 60

actaatggag tctaagggtg gcaaaaagtc tagcagtagt cgttctatga tgtatgaagc 120

tccccttggc tacagcattg aggacgttcg acctgccgga gggtgaaaga anttccagtc 180

tgctgcttac tccaactgcg cgaagaagcc atcctgatan ccctttnggc ttcctcattn 240

cnagtagttn aggttccttt tctgacattt gattctgacc aatctcggng gg 292

<210> 703
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 703

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atgtcctctc tgagtcaagc ttgtttatct atcctctgaa gattg 225

<210> 704
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 704

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ctcacctgca ccaatggctg ttctttctgc tgctggtgct cccccggcct cagctatcgg 120

gtttgagggc tatgagaagc gccttgagat cacattctct ganncacctg tctttgtgga 180

cccccatggc agcggtttgc gtgccctctc caggtcccag attgactctg ttctggatct 240

tgcacggtgc acgatcgtgt ccgagctctc caacaaggat ttgactcct 289

<210> 705
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 705

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ggacgttcat ctttcctggc gcacagccag ccccccacag gagcttctct gaggaagtgc 120

tgcacttaac cgctactttg gcgggctgaa atctggtggt aatgcttatg tgattggaga 180

tccagcaaga acctggacag aagtggnacg tcttctaacg caactgagta ccnagagcaa 240

ccaatggtta ccttgag 257

<210> 706
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 706

atgaagctcc ccttggctac agcattgagg acgttcgacc tgccggaggg tngaagaagt 60

tccagtctgc tgcttactcc aactgcgcga agaagccatc ctgatatccc ttttggcttc 120

ctcattctag tagtttagga tttcttttct gacactttga ttctgaccaa tctctctggc 180

ctgctgcttc ctgataatcg accagttccc cagtcttgct c 221

<210> 707
<211> 534
<212> nucleic acid
<213> Zea mays

<400> 707

gggnnnaggt gtttctgtaa nggnnaaann atgganatgc tctaccggtc cggaattccc 60

gggtcgaccc acgcgtccgg ttgccaaaga attccctccc ctagcccgnc gccgccgctc 120

gtctccctga gaggtgccgg gancgaggaa ctggccgagt tctaggtaga gaatcggttt 180

tgcttgtctc agcacggggt ctgctgcgtc tggtggtggt gaaggggaga aattcgtgag 240

atctgttccg gatcaggcgt gcgagctcgg gaatcagggg tttcacacat agcttcgtcg 300

atttgaattt gatgtactaa tggagtctaa gggtggcaaa aagtctagca gtagtcgttc 360

catgatgtat gaagctcccc ttggctacag cattgaggac gttcgacctg ccggaggcgt 420

gaagaagttc cagtcttgct tgcttactcc aactgcgcga agaagccatc ctgatatccc 480

ttttggtttc ctaatttnan nantttagga attntttttt gaaaccttnn annt 534

<210> 708
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 708

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cgaccagttc cccagtcttg ctccttgcac tcctccctcc atctccagca ttgtgttctg 120

attcacctgc tccaatggct gttctttctg ctgctgatgc ttccccggtc tcagctatcg 180

ggnttgaggg ctatgagaag cgcctgagat cacattctct gaggnactgt cttngtggan 240

cncanggcgg ggg 253

<210> 709
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 709

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ctgcgcaaag aagccatcct gatatccctt ttggctttct cgttctagta gtttaggatt 120

tcttttctga cacttcgatt cttaccaatc cccctggcct gctgctttcc tgacaatcga 180

ccagttcccc agtcttgctc cctgcagtcc tccctcctcc atctccagcg ttgtgttctg 240

actcacctgc accaatggct gttctttctg ctgctggtgc tcccccggcc tcagctatcg 300

g 301

<210> 710
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 710

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tggcgcacan ccagcccccc accgganctt ctccgaggaa gttgctgtac ttaancgata 120

ctttgggggc ctgaagtctg gtggcaatgc ttatgtgatt gnagatgcag caagaccagg 180

acagaantng cacatctact acgccactga gtacccagag caancaatgg tcaaccttga 240

gatgtaaana nnggntttttn c 261

<210> 711
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 711

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ccacgatcca tgtgacgcct gaggatgggt tcagctacgc cagttatgag gttatgggct 120

tggatgccac tgccctgtct tacggtgacc ttgtcaagag ggtccttggg tgcttcggcc 180

cctcggaatt ttctgtcgcc gtgaccatct tcggcgggcg gggccaagct gggacatggg 240

gaaaggaatt gg 252

<210> 712
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 712

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cacctgcacc aatggctgtt ctttctgctg ctggtgctcc cccggcctca gctatcgggt 120

ttgagggcta tgagaagcgc cttgagatca cattctctga ggcacctgtc tttgtggacc 180

cccatggcag cggtttgcgt gccctctcca ggtcccagat tgactctgtt ctggatcttg 240

cacggtgcac gatcgtgtcc gag 263

<210> 713
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 713

gaaggcggga gtgcttgatg agtaagacgg gcntctgggg tcgatttgct tctgagttgt 60

ntannttata tcgtcgcaat tncncggttg tcgtttngtn attctgtgaa gcagccncgc 120

caggctattg ttatgaaaat tgtcgtctgt aagcatgtga acttccgatg ttgccacatg 180

ctggancatc tgaataagta agtangnngc tctaggtagt cagctgcgtc tncccacaat 240

gagcatgaag tatggagaaa tatctg 266

<210> 714
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 714

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ctccacaatc catgtgacgc ccgaggacgg tttcagctat gccagttatg aggttatggg 120

cttggatgcc actgctctgt cttatggtga ccttgtcaag agggtcctcg gtgctttggc 180

ccctcggagt tttccgttgc cgtgaccatc ttcggcgggc gtggccagcc gggaacatgg 240

ga 242

<210> 715
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 715

cagctatcgg gtttgagggc tatgagangc gccttgagat cacattctct gaggcacctg 60

tactttgtgg acccccatgg cagcggtttg cgtgccctct ccaggtccca gattgactct 120

gttctggatc ttgcacggtg cacgatcgtg tccgagctct ccaacaagga ttttgantcc 180

tatgttctct ccgagtcaag cttgttcatc tatcctctga agattgtcat caagacctgt 240

ggcataccaa gctcctg 257

<210> 716
<211> 326
<212> nucleic acid
<213> Zea mays

<400> 716

ctcagctatc gggtttgagg gctatgagaa gcgccttgag atcacattct ctgaggnacc 60

tgtctttgtn gnccctcatg ggcgtggttt gcgtgncctc tccagggncc agattgacnc 120

tgttcnggat cttgcanggt gnacaattgn gnccgagctc tccaacaagg atttcgactc 180

natgtcctct ctgagtcaan ttgnttatct atcctctgaa gattgtcatc aagacctgtg 240

gcatancaag ctcctgtcan catcnaagaa tcctgagctg ctgaagagct gtctagccat 300

tgctnctgtg antatccgtg ggagtc 326

<210> 717
<211> 496
<212> nucleic acid
<213> Zea mays

<400> 717

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cccacgcgtc cggttgccaa agaattccct cccctagccg ccgccgccgc tcgtctccct 120

gagaggtgcc gggaccgagg atttggccga gttctaggta gagaatcggt tttacttgtc 180

tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg agatctgttc 240

cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt cgatttgaat 300

ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt tctatgatgt 360

atgaagctcc ccttggctac agcattgagg acgttcgacc tgccggaggc gtgaagaagt 420

tccagtctgc tgcttactcc aactgcgcga agaaccatcc tgatatccct tttggcttct 480

cattctaagt anttta 496

<210> 718
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 718

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atgaaaattt gtcgtctgta agcatgtgaa cttccgacgt tgccacatgc tggatcagtc 120

tgaataagta agtatgcagc tctaggtggt cagctgcgtc taccacaatg agcatgtacg 180

tatggagaaa tatctgtgaa cccattttgt ttatgaataa gatttgtttt ttcgagt 237

<210> 719
<211> 493
<212> nucleic acid
<213> Zea mays

<400> 719

acctnctccn gaattcccgg gtcgacccan gcgtgcgcgg gacccgagga actggccgag 60

ttctaggtag agaatcggtt ttgcttgtct cagcacggng tgtgnggngt ctggtggtgg 120

ngaaggggag aaattcgtga gatctgttcc ggatcaggcg tncgagctcg ggaatcaggg 180

gtttcacaca tagcttcgtc gatttgaatt tgatgtacta atggagtcta agggtggcaa 240

aaagtctagc agtagtcgtt ccatgatgta tgaagctccc cttggctaca gcattgagga 300

cgttcgacct gccggaggcg tgaagaantt ccagtctgct gcttactcca actgcgcgaa 360

aaaaccatcc tgatatccct tttggctttc ctcaatctaa tantttaagg atttcttttt 420

ttgacacttt taattcttac caaatntttt ttggcctggn tgctttcctg anaaatngac 480

canttcccca nnt 493

<210> 720
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 720

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gctaatcttc tctgctggga ggaggaagcg gatgccatgg aggagaaggc gggagtgctt 120

gatgagtaag acgggcttct ggtgtcgatt tgcttctgag ttgtttattt tatatcgtcg 180

caatttcgtg gttgtcgttt ggttatccgt gaagcaccca gccagcnaat gttagnaaat 240

ttgccgccgt aaccagggaa cttc 264

<210> 721
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 721

caggcgtgcg agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaatttgat 60

gtactaatgg agtctaaggg tggcaaaaag tctagcagta gtcgnntcca tgatgtatga 120

agctcccctt ggctacagca ttgaggacgt tcgacctgcc ggagggtgaa agangttcca 180

gtcngcngct tactccaact gcgnnaagaa gcccattcct gatatccctt tnggcttccn 240

cattctagta ggttaggatt nctttttctna ca 272

<210> 722
<211> 487
<212> nucleic acid
<213> Zea mays

<400> 722

ttatntncca ntgnccgnct caaatacana gncncgtnnt tcattacaan ncnnnnnnnn 60

nnnnnnnnnn nnncaaagaa ttccctcccc tagccgccgc cgccgctcgt ctccctgaga 120

ggtgccggga ccgaggaact ggccgagttc taggtagaga atcggttttg cttgtctcag 180

cacggggtct gctgcgtctg gtggtggtga aggggagaaa ttcgtgagat ctgttccgga 240

tcaggcgtgc gagctcggga atcaggggtt tcacacatag cttcgtcgat ttgaatttga 300

tgtactaatg gagtctaagg gtggcaaaaa gtctagcagt agtcgttcca tgatgtatga 360

agctcccctt ggctacagca ttgaggacgt tcgacctgcc gggaggcgtg aagaagttcc 420

agtctgctgc ttactccaac tgcgcgaaag aagccatcct gatatccctt ttggcttcct 480

caatcta 487

<210> 723

<211> 271
<212> nucleic acid
<213> Zea mays

<400> 723

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tcactcacca aggaggaagc ggatgccatg gaggagaagg cgggagtgct tgatgagtaa 120

gacgggcttc tggtgtcgat ttgcttctga gttgtttatt ttatatcgtc gcaatttcgt 180

ggttgtcgtt tggttattct gtgaagcagc caagccaggc tattgttatg aaaatttgtc 240

gtctgtaagc atgtgaactt ccgatgttgc c 271

<210> 724
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 724

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tgtggctact ccatgaatgc gatccatggc tctgcattct ccacaatcca tgtgacgccc 120

gaggacggtt tcagctatgc cagttatgag gttatgggct tggatgccac tgctctgtct 180

tatggtgacc ttgtcaagag ggtcntcggt gttg 214

<210> 725
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 725

caatcgacca gttccccagt cttgctccct gcagtcctcc ctcctccatc tccagcgttg 60

tgttctgact cacctgcacc aatggctgtt ctttctgctg ctggtgctcc cccggcctca 120

gctatcgggt ttgagggcta tgagaagcgc cttgagatca cattctctga ggcacctgtc 180

tttgtggacc cccatggcag cggtttgcgt gccctctcca ggtcccagat tgactctgtt 240

ctggatcttg cacggtgcac 260

<210> 726
<211> 536
<212> nucleic acid

<213> Zea mays

<400> 726

gagaaantgg cttccttnta gnagnnncnn angganagnn ttctatcctn tcgnanttcc 60

cgnatgngac cgacgcgtcc gcaangaatt ccctccccta gccgccgcnt ccgtcgctcg 120

tctccctgag aggtgccggg ncnggggaac tggccgagta ctaggtagag aatcggtttt 180

tcttgtctca gcccggggtc tgctgcgtct ggtggtggtg aaggggagaa attcgtgaga 240

tctgttccgg atcaggcgtg cgagctcggg aatcangggt ttcacacata gcttcgtcga 300

tttgaatttg atgtactaat ggagtctaag ggtggcaaaa agtctagcag tagtcgttct 360

atgatgtatg aagctnccct tggctacagc attgaggacc gttcgacctg ccggangcgt 420

gaagaagttc cagtctnctg cttacttcaa ctgcccnaag aagccatcct natanncctt 480

ttggctttct tattctaata gntttangat ttctttttct ganacccnnt attttt 536

<210> 727
<211> 456
<212> nucleic acid
<213> Zea mays

<400> 727

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aggatttggc cgagttctag gtagagaatc ggttttactt gtctcagccc ggggtctgct 120

gcgtctggtg gtggtgaagg ggagaaattc gtgagatctg ttccggatca ggcgtgcgag 180

ctcgggaatc aggggtttca cacatagctt cgtcgatttg aatttgatgt actaatggag 240

tctaagggtg gcaaaaagtc tagcagtagt cgttctatga tgtatgaagc tccccttggc 300

tacagcattg angacgttcg acctgccnga ngcgtgaaga aattncaagt ctgctgctta 360

ctccaactgc gccaaaaaac catnctgata ttccttttgg ctttcctaat ctagtaagtt 420

aaggatttct tttctgacac ttttgaatct gancca 456

<210> 728
<211> 196
<212> nucleic acid
<213> Zea mays

<400> 728

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ggttattctg tgaagcagcc aagccaggct attgttatga aaatttgtcg tctgtaagca 120

tgtgaacttc cgatgttgcc acatgctgga tcagtctgaa taagtaagta tgcagctcta 180

ggtggtcagc tgcgtc 196

<210> 729
<211> 218
<212> nucleic acid
<213> Zea mays

<400> 729

gattgactct gttctggatc ttgcacggtg cacgatcgtg tccgagctct ccaacaagga 60

ttttgactcc tatgttctct ccgagtcaag cttgttcatc tatcctctga agattgtcat 120

caagacctgt ggcactacca agctcctgct cacaattcca aggatcctag agcttgctga 180

agagctgtct atgcctcttg ctgctgtgaa gtactccc 218

<210> 730
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 730

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naccgnctct gtcttatggt gaccttgtca agagggtcct ccggtgcttt ggcccctcga 120

gttttccgtt gccgtgacca tcttcggcgg gcgtggccat gccgggacat ggggaaagca 180

cttggtgcag aggtctatga ctgcaacaac atggtggagc aggagctgcc tggagggggc 240

tcctcgtgta ccagagctna c 261

<210> 731
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 731

atcaggggtt tcacacatag cttcgtcgat ttgaatttga tgtactaatg gagtctaagg 60

gtggcaaaaa gtctagcagt agtcgtctat gatgtatgaa gctccccttg gctacagcat 120

tgaggacgtt cgacctgccg gagngtgaag aagttccagt ctgctgctta ctccaactgc 180

gcgaagaagc catcctgata tcctttggct tcctcatcta gtagtttagg attctttctg 240

acatttgatt ctgacaatct cctggctgtg ttctgataac gacaatcnca tctgtcttga 300

tctcct 306

<210> 732
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 732

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aagaagccat cctgatatcc cttttggctt cctcgttcta gtagtttagg atttcttttc 120

tgacacttcg attcttacca atccccctgg cctgcngctt tcctgataat cgaccagttc 180

cccagtcttg ctccctgcag tcctccctcc tccatctcca gcgttgtgtt ctgactcacc 240

tgcaccaatg gctgttcttt ctgctgctgg tgctccccgg gctnaagtat ngggt 295

<210> 733
<211> 532
<212> nucleic acid
<213> Zea mays

<400> 733

ggnnnnnnna actgtctatt cngcccgggc ccggtccaca aattnacggg gtcnacgcag 60

cgtccgcnca cgncgtccgc ccacgccgtc cgcccacgcg tccggggcaa atgcttatgt 120

gattggagat gcagcaagaa ccagggacag aagtggcaca tctactacgc cactgagacc 180

cagagcaacc aatggtcaac cttgagatgt gcatgactgg tctggacacg aagaaacttc 240

agtcttcttc aagactaatg ctgatggcaa cacaacatgt gccaaggaaa tgacgagctc 300

tctggtaanc tctgaaatta tccctgagat ggagatctgt gattttgact tcgaaccctg 360

cggctactcc catgaatgca atccatgggc tctgcgttct ccacgattca tgtgacgcct 420

gaggatgggt tcaagctacg ccaagttatg aagttatggg gcntggatgc catggncctg 480

ttctaaaggn gaaccttttc aaaaaggggc ccttnggggg cttccgcccc cc 532

<210> 734

<211> 269
<212> nucleic acid
<213> Zea mays

<400> 734

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tcctccctcc tccatctcca gcgttgtgtt ctgactcacc tgcaccaatg gctgttcttt 120

ctgctgctgg tgctcccccg gcctcagcta tcgggtttga gggctatgag aagcgccttg 180

agatcacatt ctctgaggca cctgtctttg tggacccccca tggcagcggt ttgcgtgccc 240

tctccaggtc ccagattgac tctgttctg 269

<210> 735
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 735

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tagtcgttcc atgatgtatg aagctcccct tggctacagc attgaggacg ttcgacctgc 120

cggagggtga agaagttcca gtctgctgct tactccaact gcgcgaagaa gccatcctga 180

tatccctttt ggcttccgca tnnaggagtt agggtttcta cccnnccngn g 231

<210> 736
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 736

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aagcatgtga acttccgatg ttgccacatg ctggatcagt ctgaataagt aagtatgcag 120

ctctaggtgg tcagctgcgt ctaccacaat gagcatgaac gtatggagaa atatctgtga 180

acccattttg tttatgaata agatttgttt ttttcgagtt 220

<210> 737
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 737

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ccgaggaact ggccgagtac taggtagaga atcggttttt cttgtctcag cccggggtct 120

gctgcgtctg gtggtggtga aggggagaaa ttcgtgagat ctgttccgga tcaggcgtgc 180

gagctcggga atcaggggtt tcacacatag cttcgtcgat ttgaatttga tgtactaatg 240

gagtctaagg gtggcaaaaa gtctagcagt agtcgttcta tgatgtatga agctcccttg 300

gctacagcat tgaggacgtt cgacctgccg gaggcntnaa gaagttccag tctgctgctt 360

actncaactg cgcgaaaaan ccatcctgat atcctttggc tttcctcatc taatagttta 420

ngattctttt ctgacctttg at 442

<210> 738
<211> 527
<212> nucleic acid
<213> Zea mays

<400> 738

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acccacgcgt ccgaaagaat tccctcccct agccgccgcc gccgctcgtc tccctgagag 120

gtgccgggac cgaggatttg gncgagttct aggtagagaa tcggttttac ttgtctcagc 180

ccggggtctg ctgcgtctgg tggtggtgaa ggggagaaat tcgtgagatc tgttccggat 240

caggcgtgcg agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaatttgat 300

gtactaatgg agtctaaggg tggcaaaaag tctagcagta gtcgttctat gatgtatgaa 360

gctncccttg gctacagcat tgaagacgtt cgacctgccn gaagcctgaa aaagttcaat 420

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tctaagtaag tttaaggatt cttttctgac actttgattc ttancaa 527

<210> 739
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 739

ccttgggtgc ttcggcccct cggaattttc tgtcgccgtg accatcttcg gcgggcgggg 60

ccaagctggg acatggggaa aggaacttgg tgcggaggct tatgactgca acaacatggt 120

cgagcaggag ctgcctggag gtgggatcct catctaccag agcttctgtg ctgctgaaga 180

cgccgttgct agctcgccca aatccgttct tcgctgcttt gatggcgaga atgcagcact 240

tttgcgaag 249

<210> 740
<211> 514
<212> nucleic acid
<213> Zea mays

<400> 740

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acccacgcgt ccggttgcca aagaattccc tcccctagcc gccgccgccg ctcgtctccc 120

tgagaggtgc cgggaccgag gatttggccg agttctaggt agagaatcgg ttttacttgt 180

ctcagcccgg ggtctgctgc gtctggtggt ggtgaagggg agaaattcgt gagatctgtt 240

ccggatcagg cgtgcgagct cgggaatcag gggtttcaca catagcttcg tcgatttgaa 300

tttgatgtac taatggagtc taagggtggc aaaaagtcta gcagtagtcg ttctatgatg 360

tatgaagctc cccttggcta cagcattgag gacgttcgac ctgccggagg cgtgaagaag 420

ttccagtctg ctgcttactc caactgcgcg aagaaccatc ctgatatccc ttttggcttn 480

ctcattctag taanttaaga attcntttnt tgac 514

<210> 741
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 741

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tcctgacaat cgaccagttc cccagtcttg ctccctgcag tcctccctcc tccatctcca 120

gcgttgtgtt ctgactcacc tgcaccaatg gctgttcttt ctgctgctgg tgctccccccg 180

gcctcagcta tcgggtttga gggctatgag aagcgccttg agatcacatt ctctgaggca 240

cctgtctttg tggaccccat ggcagcggtt tgcgtgccct ctccaggtcc cagattga 298

<210> 742

<211> 217
<212> nucleic acid
<213> Zea mays

<400> 742

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tctccatacg ttcatgctca ttgtggtaga cgcagctgac cacctagagc tgcatactta 120

cttattcaga ctgatccagc atgtggcaac atcggaagtt cacatgctta cagacgacaa 180

attttcataa caatagcctg gcttggctgc ttcacag 217

<210> 743
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 743

tgcgattttg acttcgaacc ctgtggctac tccatgaatg cgatccatgg ctctgcattc 60

tccacaatcc atgtgacgcc cgaggacggt ttcagctacg ccagttacga ggttatgggc 120

ttggatgcca ctgctctgtc ttatggtgac cttgtcaaga gggtcctccg gtgctttggc 180

c 181

<210> 744
<211> 373
<212> nucleic acid
<213> Zea mays

<400> 744

gccaaagaat tccctcccct agccgccgnn nccgctcgtc tccctgagag gtgccgggac 60

cgaggatttg gccgagttct aggtagagaa tcggttttac ttgtctcagc ccggggtctg 120

ctgcgtctgg tggtggtgaa ggggagaaat tcgtgagatc tgttccggat caggcgtgcg 180

agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaatttgat gtactaatgg 240

agtctaaggg tggcaaaaag tctagcagta gtcgttctat gatgtatgaa gctccccttg 300

gctacagcat tgaggacgtt cgacctgccg gaggcgtgaa gaagttccag tctgctgctt 360

actccaactg cgc 373

<210> 745

<211> 281
<212> nucleic acid
<213> Zea mays

<400> 745

gtctcagccc ggggtctgct gcgtctggtg gtggtgaagg ggagaaattc gtnaganctg 60

ttccggatca ggcgtgcgag gctcnggaat tcaggggttt cacacatagc ttcgtcgatn 120

tgaatttnat gtactaatgg agtctaaggg tngcaaaaag tctagcagta gtcgttctat 180

gatgtatgaa gctccccttg gctacagcat tgaggacgtt cgacctgccg gaggngtgaa 240

gaagttccag tctgctgctt actccaactg cgcgaagang c 281

<210> 746
<211> 184
<212> nucleic acid
<213> Zea mays

<400> 746

gtggcaaaaa gtctagcagt agtcgttcta tgatgtatga agctcccctt ggctacagca 60

ttgaggacgt tcgacctgcc ggagggtgaa gaagttccag tctgctgctt actccaactg 120

cgcgaagaag ccatcctgat atcccttttg gcttcctcat tctagtagtt taggatttct 180

tttc 184

<210> 747
<211> 170
<212> nucleic acid
<213> Zea mays

<400> 747

cagcaagacc tggacagaag tggcacgtct tctacgccac tgagtaccca gagcaaccaa 60

tggttaacct tgagatgtgc atgactggtc tggacaagaa gaaagcttgt gtctttttca 120

agactaatgc tgatgggaac acaacatgtg ccaaggaaat gacaaagctc 170

<210> 748
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 748

attacntncc ctagccggcg tcgccgctcg tnttcctgag aggtgccggg accganggnn 60

tggncgantt ctangtagag aatcggtttt actngtctca acccggngtc tgctgcgtct 120

ggtggtggtg aangggagaa attcntgaga tctgtnccgg atcaggcgng cgagctcggg 180

aatcaggggt ttcacacata gcttcgtccg atttgaattt gatgtactan atggantcta 240

anggtggcaa aaagtctanc attagtcgct ctatgatgta tgaanctccc ctnggctaca 300

gcattgagga cgttcgacct gccggaggcg tgnanangtt ccagtctgat gcttactnca 360

actgcgcgan ganccatcct gatatccctt ttggntncct cattctagna cgttaggant 420

tnttgttgac acttngattc t 441

<210> 749
<211> 195
<212> nucleic acid
<213> Zea mays

<400> 749

agcaagacct ggacagaagt ggcacgtctt ctacgccact gagtacccag agcaaccaat 60

ggttaacctt gagatgtgca tgactggtct ggacaagaag aaagcttctg tctttttcaa 120

gactaangct gatgggnaca cagcatgtgc naaggaatga caaagctctc tggcatctct 180

gagtcatccc cgagt 195

<210> 750
<211> 463
<212> nucleic acid
<213> Zea mays

<400> 750

gactagttct agatcgctag ccgcacgctt cttgttgcca aagaattccc tcccctagcc 60

gccgccgccg ctcgtctccc tgagaggtgc cgggaccgag gatttggccg agttctaggt 120

agagaatcgg ttttacttgt ctcagcccgg ggtctgctgc gtctggtggt ggtgaagggg 180

agaaattcgt gagatctgtt ccggatcagg cgtgcgagct cgggaatcag gggtttcaca 240

catagcttcg tcgatttgaa tttgatgtac taatggagtc taagggtggc aaaaagtcta 300

gcagtagtcg ttctatgatg tatgaagctc cccttggcta cagcattgag gacgttcgac 360

ctgccggagg cgtgaagaaa ttccagtctg ctgcttactc nactgngcga agaaccatnc 420

tgatatcctt ttnggtttct taatctaaga nnttangatt ctt 463

<210> 751
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 751

gtgttctgat tcacctgctc caatggctgt nctttctgct gctgatgctt ccccggtctc 60

agctatcggg tttgagggct atgagaagcg ctttgagatc acattctctg aggcacctgt 120

cttgtggacc tcatgggcgt ggtttgcgtg nccctctncn agggcccaga ttgaactctg 180

tacnggatct tggcaggnng caaaattgtg tctggagctc tccaacaagg atttcgactc 240

atatgtcctn tctgaagtna agcttgtnta tcnnnnccag gaagatngac ca 292

<210> 752
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 752

ggagaagttt aagatctgtt ccacagatca cgcgtgcncg ctcgcgaatc gggggttcca 60

cacataatnt nactanttga atttgatgta ctaatggant ctaanggtgg caagaagtnc 120

agcagtagtc gntccatgat gtatgaagct ccccttggct acagcatnng aanncgttcg 180

acctgccgga gnncgaagaa gttccagtct gctgcttact ccaactgcgc aaagaagcca 240

tcctgatatc ccttttggct tcctcgttct agtagtttag gatttctttt c 291

<210> 753
<211> 506
<212> nucleic acid
<213> Zea mays

<400> 753

gtggggnngn aatgttcgtt gccgtgccgg tccgaaaatc acgggtcgac ccacgcgtcc 60

gaagaattcc ctcatagccg ccgccgccgc cgccgccgcc gctcatctcg ccgagaggtg 120

acgggaccga ggaactcgcc gagttctaag atagagaatc gcttttcaca gcctggggtc 180

tgctgcgtag ggtggtgttg aaggggagaa gtttaagatc tgttccacag atcacgcgtg 240

cgcgctcgcg aatcgggggt tccacacata gcttcgtcgt tttgaatttg atgtactaat 300

ggagtctaag ggtggcaaga agtctagcag tagtcgttcc atgatgtatg aagctcccct 360

tggctacagc attgaggacg ttcgacctgc cggaggcgcc aagaagttcc aatctgctgc 420

ttactccaac tggcgcaaag aaancatcct gaaaacccct ttggnntcct ccttccaata 480

atttaaggat tcctttccna aaacnt 506

<210> 754
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 754

ggatgtatga agctcccctt gggctacagc attgaggacg ttcgaacctg nccggancgt 60

tgaagaagtt ccagtctggc tgnttacgnc caactgcgcc naagangcca tcctggatat 120

cccttttggc ttcctcattc tagnagttta ggatttcttt tctgacactt tgatgctgac 180

naatctctct ggcctggtgc ttcctgataa tcgaccagtt cccagtcttg ctccttgcat 240

cctcgctcct ccatctncag cattgtgtcc gattc 275

<210> 755
<211> 158
<212> nucleic acid
<213> Zea mays

<400> 755

tcgtttggtt attctgtgaa gcagccaagc caggctattg ttatgaaaat ttgtcgtctg 60

taagcatgtg aacttccgat gttgccacat gctggatcag tctgaataag taagtatgca 120

gctctaggtg gtcagctgcg tctaccacaa tgagcatg 158

<210> 756
<211> 165
<212> nucleic acid
<213> Zea mays

<400> 756

cctccctcca tctccagcat tgtgttctga ttcacctgct ccaatggctg ttctttctgc 60

tgctgatgct tccccggtct cagctatcgg gtttgagggc tatgagaagc gccttgagat 120

cacattctct gaggcacctg tctttgtnga ccctcattcn cntng 165

<210> 757
<211> 157
<212> nucleic acid
<213> Zea mays

<400> 757

agcgccttga gatcacattc tctgaggcac ctgtctttgt ggaccctcat gggcgtggtt 60

tgcgtgccct ctccagggcc cagattgact ctgttctgga tcttgcacgg tgcacaattg 120

tgtccgagct ctccaacaag gatttcgact catatgt 157

<210> 758
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 758

tgatgtcgca tgcacgcgta cgtaagctcg gaattcggct cgagngaaat gacaaagctc 60

tctggcactc tgaaatcatc cccgagatgg agatctgcga ttttgacttc gaaccctgtg 120

gctactccat gaatgcgatc catggntctg cattctccac aanccatgtg acgcccgagg 180

acggtttnag ctangcnagt tangaggttn tgggctgggn n 221

<210> 759
<211> 493
<212> nucleic acid
<213> Zea mays

<400> 759

gggnnnnnng gnaacttnta ccgngccgta ccggtcaana aattcccggg tcnacccacc 60

gtccgnacac gcgtccgctc ccctagccgc cgccgccgcc gctcgtctcc ctgagagggc 120

cgggaccgag gaactggccg agtactaggt agagaatcgg tttttcttgt ctcagccggg 180

gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg agatctgttc cggatcggcg 240

tgcgagctcg ggaatcaggg gtttcacaca tagcttcgtc gatttgaatt tgatgactaa 300

tggagtctaa gggtggcaaa aagtctagca gtagtcgttc taatgatgta tgaactcccc 360

ttggctacag cattgangac gttcgacctg ccggaggcgt naagaanttc cagcctgctg 420

ctactccaac tgcgcnaaag aanccatcct ganaacccct ttgggctcct catccaataa 480

nttaaggatt tct 493

<210> 760
<211> 218
<212> nucleic acid
<213> Zea mays

<400> 760

cngacntgtg tgccgggatc aggcgtgcna gctcgggaat caggggtttc acacatagct 60

ccttcgattt gaatttgatg tactaatggn gtctaagggt ggcaaaaagt ctagcagtag 120

tcgttctatg atgtatgaag ctccccttgg gctacagcat tgaggangtt cgacctgccg 180

gacgtgaaga agttccagtc tgntgnttac tccaaatg 218

<210> 761
<211> 168
<212> nucleic acid
<213> Zea mays

<400> 761

gcaagaccng gacagangtg gcacgtcttc tacgccacng agtacccaga gcaaccaang 60

gtnaaccttg agangtgcat gacnggtctg gacaagaaga aagcntgtgt ctntnncaag 120

actaatgcng atgggaacac aacangtgcc aaggaaatga caaagcnc 168

<210> 762
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 762

ggagagtgct cctcctccta tgaagaagga ctacaagctg gctaatcttc tctgctggna 60

ggaggaagcg gatgccatgg aggagaaggc gggagtgctt gatgagtaag acgggcttct 120

ggggtcgatt tgcttctgag ttgtttattt t 151

<210> 763
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 763

cttgtcaaga gggtcctccn gtgctttggc ccctcagagt tttccgttgc cgtgaccatc 60

ttcggcgggc gtggccatgc cgggacatgg ggaaaggcac ttggtgcaga ggtctatgac 120

tgcaacaaca atggtggaat agganctcc tggaaggcgg ggntcctcgt gtaaccaaaa 180

acttctgtgc tgctnaagac ncngttgcta acctcgcccc aaattttt 228

<210> 764
<211> 147
<212> nucleic acid
<213> Zea mays

<400> 764

agcttgatga gtaagacggg cttctggtgt cgatttgctt ctgagttgtt tattttatat 60

cgtcgcaatt tcgtggttgt cgtttggtta ttctgtgaag cagccaagcc aggctattgt 120

tatgaaaatt tgtcgtctgt aagcatg 147

<210> 765
<211> 187
<212> nucleic acid
<213> Zea mays

<400> 765

cgtgaccatc ttcggccggg cgtggccatg ccgggcacat ggggaaaggc actaggtgca 60

gaggtctatg actgcaacaa catgtggagc aggagctgcc tggaggcggg ctcctcgtat 120

accagagctt ctgcgctgct gaagacgctg ttgctacctt cgcccaaatc tgttttccac 180

tgctttg 187

<210> 766
<211> 154
<212> nucleic acid
<213> Zea mays

<400> 766

gcttcctgat aatcgaccag ttccccagtc ttgctccttg cactcctccc tcctccatct 60

ccagcattgt gttctgattc acctgctcca atggctgttc tttctgctgc tgatgcttcc 120

ccggtctcag ctatcgggtt tgagggcatg agaa 154

<210> 767
<211> 162
<212> nucleic acid
<213> Zea mays

<400> 767

tctggatctt gcacggtgca caattgtgtc cgagctctcc aacaaggatt tcgactcata 60

tgtacctctc tgagtcaagc ttgtttatct atccctctga agattgtnat caagacctgt 120

ggcactacca agctcctgct caccattcca agaatccttg ag 162

<210> 768
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 768

ccctccccta gccgccgccg ccgctcgtct ccctgagagg tgccgggacc gaggaactgg 60

ccgagttcta ggtagagaat cggttttgct tgtctcagca cggggtctgc tgcgtctggt 120

ggtggtgaag ggagaaatt cgtgagatct gttccggatc aggcgtgcga gctcgggaat 180

caggggtttc acacatagct tcgtcgattt gaatttgatg tactaatgga gtctaagggt 240

ggcaaaaagt ctagcagtag tcgttccatg atgtatgaag ctccccttgg ctacagcatt 300

gaggacgttc gacctgccgg 320

<210> 769
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 769

ctcgtctccc tgagangtgc cgggaccgag gaactggccg agttctaggt agagaatcgg 60

ttttgcttgt ctcagcannn ggtctgctgc gtctggtggt ggtgaagggg agaaattcgt 120

gagatctgtt ccggatcagg cgtgcgagct cgggaatcag gggtttcaca catagcttcg 180

tcgatttgaa tttgatgtac taatggagtc taagggtggc aaaaagtcta gcagtagtcg 240

ttccatgatg tatgaagctc cccttggcta cagcattgag gacgttcgac ctgcc 295

<210> 770

<211> 329
<212> nucleic acid
<213> Zea mays

<400> 770

ccatcttcgg cgggcgtggc catgncgggg acatggggaa aggacttggt gnagaggtct 60

atgactgcaa caacatggtg gagcagagct gcctggagcg ggctctctgt accagagttc 120

ngtgctgctg aagacgtgtg ntactcgcca atctgttncc actgcttgac ggcgagacgt 180

ggaagtgtcc tcctcctatg aagaaggata caagctggct aatcttctct gtgggaggag 240

gagcggatnc atggaggaga aggcgggatg cttgattgag tagacgggtt ctggggtcga 300

ttnttctgag tgttattntn cgcgcaatt 329

<210> 771
<211> 511
<212> nucleic acid
<213> Zea mays

<400> 771

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ggtcgaccca cgcgtccgat tnantcccat agccgacnac ggcgntcgtc tgcctgagag 120

gtgccgggac cgaggnactg gncgagttct agggagagaa tcggttttgc ttgtctnagc 180

acggggtctg ntgcgtctgg tggtggtgaa ggggagaaat tcgtgagatc tgttccggat 240

caggcgtgcg agctcgggaa tcaggggttt cacacatagn ttcgtngatt tgaatttgat 300

gtactaatgg agtctaaggg tggcaaaaag tctagcangg agtcgttcca tgatgtatga 360

agctcccctt ggntacagga ttgaagacgt tagactncct ganggcatga aaaaagttca 420

agctggnggt tnnttcaanc nccncnanaa accgttcntn aattcccttt nggttnctta 480

atctnaaann ttaaganttn ctttcttaaa a 511

<210> 772
<211> 154
<212> nucleic acid
<213> Zea mays

<400> 772

taagcatgtg aacttccgac gttgccacat gctggatcag tctgaataag taagtatgca 60

gctctaggtg gtcagctgcg tctaccacaa tgagcatgta cgtatggaga aatatctgtg 120

aacccatttt gtttatgaat aagatttgtt tttt 154

<210> 773
<211> 160
<212> nucleic acid
<213> Zea mays

<400> 773

taagcatgtg aacttccgat gttgccacat gctggatcag tctgaataag taagtatgca 60

gctctaggtg gtcagctgcg tctaccacaa tgagcatgac gtatggagaa atatctgtga 120

acccattttg tttatgaata agatttgttt ttttcgagtt 160

<210> 774
<211> 126
<212> nucleic acid
<213> Zea mays

<400> 774

cctccctcca tctccagcat tgtgttctga ttcacctgct ccaatggctg ttctttctgc 60

tgctgatgct tccccggtct cagctatcgg gtttgngggc tatgngaagc gccttgagat 120

cacatt 126

<210> 775
<211> 391
<212> nucleic acid
<213> Zea mays

<400> 775

aatctctacn gctccagggc ccggnccagg aantacggng tcgacccatc cacacaggca 60

nccggttgcc aaagaattcc ctcccctagc cgccgccgcc gctcgtctcc ctgagaggtg 120

ccgggaccga ggaactggcc gagttctagg tagagaatcg gttttgcttg tctcagcacg 180

gggtctgctg cgtctggtgg tggtgaaggg gagaaattcg tgagatctgt tccggatcag 240

gcgtgcgagc tcgggaatca ggggtttcac acatagcttc gtcgatttga atttgatgta 300

ctaatggagt ctaagggtgg caaaaagtct agcagtagtc gttccatgat gtatgaagct 360

ccccttggct acagcattga ggacgttcga c 391

<210> 776
<211> 493
<212> nucleic acid
<213> Zea mays

<400> 776

gtgagngttt ntttngnnna nggnggngng atgntatctt cgtccggaat tcccgggtcg 60

acccacgcnt ccgctnccct agccgccncc gcccgntcgt ctccctgaga ggtgccngga 120

ccgangaact ggccgngttc taggtagaga atnggttttg cttgtctcan cacggggtct 180

gctgcgtctg gtggtggtga aggggagaaa ttcgtgagat ctgttccgga tcaggcgtgc 240

gagctcggga atcaggggtt tcacacatag cttcgtcgat ttgaatttga tgtactaatg 300

gagtctaagg gtggcaaaaa gtctagcagt antcnttcca tgatgtatga agctncccnt 360

ggctacagca ttgaggacgt cnanctnccc ggaagcntta aanaattnca gnctgtgntt 420

antnnaactg ncnaanaaac nattctgana tnncttttg gntttnntan tnnaanantt 480

nanganttnt ttt 493

<210> 777
<211> 193
<212> nucleic acid
<213> Zea mays

<400> 777

taagcatgtg aacttccgat gttgccacat gctggatcag tctgaataag taagtaatgc 60

agctncnggg ttggtcagnt gcgtctagca naatgagcat gtacgtatgg agaaatntnn 120

tgtgaaccca ttttgtttat gaataagatt tgttttttt cgagttaaaa naaaaaaaaa 180

agggcggccn cng 193

<210> 778
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 778

gtgacgcccg aggacggttt cagctatgcc agttatgagg ttatgggctt ggatgccact 60

gctctntcct tatggtgacc ttgtcaagag ggtccttcgg tgctttggcc cctcggagtt 120

ttccgttgcc gtganc 136

<210> 779
<211> 117
<212> nucleic acid
<213> Zea mays

<400> 779

ggctgttctt tctgctgctg atgcttcccc ggtctcagct atcgggtttg agggctatga 60

gaagcgcctt gagatcacat tctctgaggc acctgtcttt gtggaccctc atgggcg 117

<210> 780
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 780

tcccctagcn gccgccgccg ccgatcgtct cccctgagag gtgccgggac cgangaactt 60

ggccgagtac taggtagaga aattcgtgag atctgttccn gatcangcgt gcgagctcgg 120

gaatcagggg tttcacacat agctcgtcga tntgaatttg atgtactaat ggagtctaag 180

ggtggcaaaa agtctagcag tagtcgttct atgatgtatg aagctcccct tggctacagc 240

attgatgacg ttc 253

<210> 781
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 781

tcgtctccct gagaggtgcc gggaccgagg aactggccga gtactaggta gagaatcggt 60

ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaagctcc ccttggctac agc 273

<210> 782
<211> 110
<212> nucleic acid

<213> Zea mays

<400> 782

gtggagagtg ctcctcctcc tatgaagaag gactacaagc tggctaatct tctctgctgg 60

gaggaggaag cggatgccat ggaggagaag gcgggagtgc ttgatgagta 110

<210> 783
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 783

tcgtctccct gagaggtgcc gggaccgagg aactggccga gtactaggta gagaatcggt 60

ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaagctcc ccttggctac ag 272

<210> 784
<211> 491
<212> nucleic acid
<213> Zea mays

<400> 784

gagttnttcn tgnngggggg nagganngna aaacttntac cggtccggaa ttcccgggcc 60

cctagccgcc gccgccgctc gtctccctga gaggtgccgg gaccgaggaa ctggccgagt 120

tctaggtaga gaatcggttt tgcttgtctc agcacggggt ctgctgcgtc tggtggtggt 180

gaaggggaga aattcgtgag atctgttccg gatcaggcgt gcgagctcgg gaatcagggg 240

tttcacacat agcttcgtcg atttgaattt gatgtactaa tggagtctaa gggtggcaaa 300

aagtctaaca agtagtcgtt ccatgatgta tgaagctccc cttggctaca gcatttgaag 360

gacgttcgaa cctgccggaa gcnttnaaga agttncaagt ctgctgntta cttccaactt 420

gngccaaaaa agccatcctg atattccntt tggctttcct aatctaagta agtttaagga 480

ttcctttctt g 491

<210> 785

<211> 273
<212> nucleic acid
<213> Zea mays

<400> 785

tcatctcgcc gagangtgac gggaccgagg aactcgccga gttctaagat agagaatcgc 60

ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

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gatgtatgaa gctccccttg gctacagcat tga 273

<210> 786
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<212> nucleic acid
<213> Zea mays

<400> 786

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ctgctgcgtc tggnggtggt gaaggggaga aattcgtgag atctgttccg gatcaggcgt 180

gcgagctcgg gaatcagggg tttcacacat agcttcgtcg atttgaattt gatgtactaa 240

tggagtctaa gggtggcaaa aagtctagca gtagtcgttc catgatgtat gaagctcccc 300

ttggctacag 310

<210> 787
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 787

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cgaggaactg gccgagttct aggtagagaa tcggttttgc ttgtctcagc acggggtctg 120

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agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaatttgat gtactaatgg 240

agtctaaggg tggcaaaaag tctagcagta gtcgttccat gatgtatgaa gctccccttg 300

gctacag 307

<210> 788
<211> 107
<212> nucleic acid
<213> Zea mays

<400> 788

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cctggtgcac agccagcccc ccacaggagc ttctctgagg aagttgc 107

<210> 789
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 789

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaagctcc ccttg 265

<210> 790
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 790

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gttctaggta gagaatcggt tttgcttgan ntcagcacgg ggtctgctgc gtctggtggt 120

ggtgaaaggg agaaattcgt gagatctgtt ccggatcagg cgtgcgagct cgggaatcag 180

gggtttcaca catagcttcg tcgatttgaa tttgatgtac taatggagtc taaagggtgg 240

caaaaagtct agcagtagtc gttccatgat gtatgnagct cccctttgct acaacattgn 300

ggac 304

<210> 791

<211> 149
<212> nucleic acid
<213> Zea mays

<400> 791

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tcaccattac caagaatcct tgagcttgct gaagagctgt ctatgccact tgcaccagga 120

aagatgaacg tccctagttc tagatcgcg 149

<210> 792
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 792

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ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

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gatgtatgaa gctccccttg gctacacatt gag 273

<210> 793
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 793

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gtactaggta gagaatcngt ttttcttgtc tcagcccggg gtctgctgcg tctggtggtn 120

ntgaaggnga gaanttcgtg agatctgttc cggatcaggc gtgcnagctc gggantcagg 180

ggtttcacac atagcttcgt cgatttgaat ttgatgtact aatngagtct aanggtggca 240

aaaagtctag cagtagtcgt tctatgangt atgaagctcc ccttg 285

<210> 794
<211> 135
<212> nucleic acid
<213> Zea mays

<400> 794

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ttggacttcg aaccctntgg ctactccann antgcgntcc atggctctng attntgcnac 120

aatccntgtg acgcc 135

<210> 795
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 795

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaagct 258

<210> 796
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 796

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ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

tgaatttgat gtactaatgg agtctaaggg tggcaagaag tctagcagta gtcgttccat 240

gatgtatgaa gctccccttg g 261

<210> 797
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 797

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaagctcc 260

<210> 798
<211> 102
<212> nucleic acid
<213> Zea mays

<400> 798

ctttgattct gaccaatctc tctggcctgc tgcttcctga taatcgacca gttccccagt 60

cttgctcctt gcactcctcc ctcctccatc tccagcattg tg 102

<210> 799
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 799

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ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atga 254

<210> 800
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 800

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agatctgttc tggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaa 255

<210> 801
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 801

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaa 255

<210> 802
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 802

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt atgaa 255

<210> 803
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 803

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gaccgaggaa ctggccgagt tctaggtaga gaatcggttt tgcttgtctc agcacggggt 120

ctgctgcgtc tggtggtggt gaaggggaga aattcgtgag atctgttccg gatcaggcgt 180

gcgagctcgg gaatcagggg tttcacacat agctccgtcg atttgaattt gatgtactaa 240

tggagtctaa gggtggcaaa aagtctagca gtagtcgttc catgatgtat gaagctccc 299

<210> 804
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 804

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ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtgcaa aaagtctagc agtagtcgtn 240

tatgatgtat aaagcncccc ttggctanag cattgaggac gttngacctg ccggg 295

<210> 805
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 805

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ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

tgaatttgat gtactaatgg agtctaaggg tggcaagaag tctagcagta gtcgttccat 240

gatgtatgaa gctcc 255

<210> 806
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 806

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taggnagaga atcggttttt cttgtctcag cccggggtct gctgcgtctg gtggtggtga 120

aggggagaaa ttcgngagat ctgttccgga tcaggcgtgc nanctcggna atcaggggtt 180

tcacacatag cttcgncgan ttgantntna tgtactaatg gagtctaagg gtggcaaaaa 240

gtctagcagt agncgttcta tgatgtatga agctcccc 278

<210> 807
<211> 127
<212> nucleic acid
<213> Zea mays

<400> 807

ttccggatca ggcgtgcgag ctcgggaatc aggggtttca cacanagctt cgtcgatttg 60

aatttgatgt actantggag tctaagggtg gcaaaaagtc tagcagtagt cgttctatga 120

tgtntga 127

<210> 808
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 808

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ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt a 251

<210> 809
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 809

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt 250

<210> 810

<211> 250
<212> nucleic acid
<213> Zea mays

<400> 810

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ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aaaagtctag cagtagtcgt 240

tctatgatgt 250

<210> 811
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 811

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ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgcttcgcga atcggggtt ccacacatag cttcgtcgtt 180

ttgaattgat gtactaatgg agtctaaggg tggcaagaag tctagcagta gtcgttccat 240

gatgtatgaa gctccccttg 260

<210> 812
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 812

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gagaatcgct tttcacagcc tggggtctgc tgcgtanggt ggtgttgaag gggagaagtt 120

taagatctgt tccacagatc acgcgtgcgc gctcgcgaat cggggttcc acacatagct 180

tcgtcgtttt gaatttgatg tactaatgga gtctaagggt ggcaagaagt ctagcagtag 240

tcgttccatg atgtatg 257

<210> 813

<211> 155
<212> nucleic acid
<213> Zea mays

<400> 813

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ttgtccctgc agtcctccct ctccatctcc agcgttgtgt tctgactcac ctgcaccaat 120

ggctgttctt tctgctgctg gtgtcccccg gntca 155

<210> 814
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 814

anaattccct cccctagccg ccgccgccgc tcgtctccct gagaggtgcc gggaccgagg 60

aactggccga gttctaggna ganaatcggt tttgcttgtc tcagcacggg gtctgctgcg 120

tctggtggtg gtgaagggga gaaattcgtg agatctgttc cggatcaggc gtgcnagctc 180

gggaatcagg ggtttcacac atagcttcgt cgatttgaat ttgatgtact aatggagtct 240

aagggtggca aaaagtctag cagtagtcgt tccatg 276

<210> 815
<211> 97
<212> nucleic acid
<213> Zea mays

<400> 815

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ttgagcttgc ngaaganctg tctatgccan ttggctg 97

<210> 816
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 816

ccctagccgc cgccgccgct cgtctccctg agaggtgccg ggaccgagga actggccgag 60

ttctaggtag agaatcggtt ttgcttgtct cagcacgggg tctgctgcgt ctggtggtgg 120

tgaaggggag aaattcgtga gatctgttcc ggatcaggcg tgcgagctcg ggaatcaggg 180

gtttcacaca tagcttcgtc gatttgaatt tgatgtacta atggagtcta agggtggcaa 240

aaagtctagc agtagtcgtt cc 262

<210> 817
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 817

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gaccgaggaa ctggccgagt tctaggtaga gaatcggttt tgcttgtctc ancacggggt 120

ctgctgcgtc tggtggtggt gaaggggaga aattcgtgag atctgttccg gatcaggcgt 180

gcgagctcgg gaatcagggg tttcacacat agcttcgtcg atttgaattt gatgtactaa 240

tggagtctaa gggtggcaaa aagtctagca gtagtcgttc c 281

<210> 818
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 818

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ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

tgaattgatg tactaatgga gtctaagggt ggcaagaagt ctagcagtag tcgttccatg 240

atgtatgaag 250

<210> 819
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 819

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tttttcttgt ctcagcccgg ggtctgctgc gtctggtggt ggtgaagggg agaaattcgt 120

gagatctgtt ccggatcagg cgtgcgagct cgggaatcag gggtttcaca catagcttcg 180

tcgatttgaa tttgatgtac taatggagtc taagggtggc aaaaagtcta gcatagtcgt 240

tctatgatgt atg 253

<210> 820
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 820

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ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ngtttcacac atagcttcgt 180

cgatttgaat tgatgtacta atggagtcta agggtggcaa aaagtctagc agtagtcgtt 240

ctatgat 247

<210> 821
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 821

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tggccgagtt ctaggtagag aatcggtttt gcttgtctca gcacgggtct gctgcgtctg 120

gtggtggtga aggggagaaa ttcgtgaaga tctgttccgg ntcaaggcgt gcgatctcgg 180

gaatcagggg tttcacacat agcttcgtcg atttgaattt gatgtactaa tggagtctaa 240

gggtggcaaa aagtctagcc agtagtcgtt ccatgatgt 279

<210> 822
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 822

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agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtngnn aaaagtctag cagtagtcgt 240

ctatgatgta tna 253

<210> 823
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 823

caaagaattc cctcccctag ccgccgccgc cgctcgtctc cctgagaggt gccgggaccg 60

aggaactggc cgagttctag gtagagaatc ggttttgctt gtctcagcac ggggtctgct 120

gcgtctggtg gtggtgaagg ggagaaattc gtgagatctg ttccggatca ggcgtgcgag 180

ctcgggaatc aggggtttca cacatagctt cgtcgatttg aatttgatgt actaatggag 240

tctaagggtg gcaaaaagtc tagcagtag 269

<210> 824
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 824

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gtgccgggac cgangaactg gccgagttct aggtagagaa tcggttttgc ttgtctcagc 120

acggggtctg ctgcgtctgg tggtggtgaa ggggagaaat tcgtgagatc tgttccggat 180

caggcgtgcg agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaatttgat 240

gtactaatgg agtctaaggg tggcaaaaag tctagcagta gtcttccatg atgtat 296

<210> 825
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 825

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agcncgggaa tcaggggttt cacacatagc tcgtcgattt gaatttgatg tactaatgga 240

gtctaagggt ggcaaaaagt ctagcatagt cgttccatga tgtatgaagc tcccct 296

<210> 826
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 826

aaaagaattc cctcccctag ccgccgccgc cgctcgtctc cctgagaggt gccgggaccg 60

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ggtctggtgg tggtgaaggg gagaaattcg tgagatctgt tccggatcag gcgtgcgagc 180

tcgggaatca ggggtttcac acatagcttc gtcgatttga atttgatgta ctaatggagt 240

ctaagggtgg caaaaagtct agcagta 267

<210> 827
<211> 506
<212> nucleic acid
<213> Zea mays

<400> 827

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gacccacgcg tccggttgcc aaagaattcc ctcccctagc cgccgccgcc gctcgtctcc 120

ctgagaggtg ccgggaccga ggatttggcc gagttctagg tagagaatcg gttttacttg 180

tctcagcccg gggtctgctg cgtctggtgg tggtgaaggg gagaaattcg tgagatctgt 240

tccggatcag gcgtgcgagc tcgggaatca ggggtttcac acatagcttc gtcgatttga 300

atttgatgta ctaatggaat ctaanggtgg caaaaantct aacaataatc gntctatgaa 360

tggatgaaac tnccc ttggc tncancattg aagaccttcg anctnnccga agcnttaaaa 420

aattccagtc tgntggttac ttcaactnng ccgaaaaacc attctggaat tccctttngn 480

tttcctnaat ctaatantta aggatt 506

<210> 828
<211> 295
<212> nucleic acid

<213> Zea mays

<400> 828

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gagaggtgcc gggaccgagg aactggccga gttctaggta gagaatcggt tttgcttgtc 120

tcagcacggg gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg agatctgttc 180

cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt cgatttgaat 240

ttgatgtact aatggagtct aagggtggca aaaatctagc agtagtcgtt ccatg 295

<210> 829
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 829

gttgccaaag aattccctcc cctagccgcc gccgccgctc gtctccctga gaggtgccgg 60

gaccgaggaa ctggccgagt tctaggtaga gaatcggttt tgcttgtctc agcacggggt 120

ctgctgcgtc tggtggtggt gaaggggaga aattcgtgag atctgttccg gatcaggcgt 180

gcgagctcgg gaatcagggg tttcacacat agcttcgtcg atttgaattt gatgtactaa 240

tggagtctaa gggtggcaaa aagtc 265

<210> 830
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 830

cttcttgttg ccaaagaatt ccctccccta gccgccgccg ccgctcgtct ccctgagagg 60

tgccgggacc gaggaactgg ccgagttcta ggtagagaat cggttttgct tgtctcagca 120

cggggtctgc tgcgtctggt ggtggtgaag gggagaaatt cgtgagatct gttccggatc 180

aggcgtgcga gctcgggaat caggggtttc acacatagct tcgtcgattt gaatttgatg 240

tactaatgga gtctaagggt ggcaaaaagt c 271

<210> 831
<211> 228
<212> nucleic acid

<213> Zea mays

<400> 831

tcatctcgcc gagaggtgac gggaccgagg aactcgccga gttctaagat agagaatcgc 60

ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgctcgcgaa tcgggggttc cacacatagc ttcgtcgttt 180

tgaatttgat gtactaatgg agtctaaggg tggcaagaag tctagcag 228

<210> 832
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 832

tcgtctccct gagaggtgcc gggaccgagg aatggccgag tactaggtag agaatcggtt 60

tttcttgtct cagcccgggg tctgctgcgt ctggtggtgg tgaaggggag aaattcgtga 120

gatctgttcc ggatcaggcg tgcgagctcg ggaatcaggg gtttcacaca tagcttcgtc 180

gatttgaatt tgatgtacta atggagtcta agggtggcaa aaagtct 227

<210> 833
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 833

gttgccaaag anttccctcc cctagccgcc gccgccgctc gtactccctg agaggtgccg 60

ggaccgagga actggccgag ttctaggtng agnatcggtt ttgcttgtct cagcacgggg 120

tctgctgcgt ctggtggtgg tgangggag aaattcgtga gatctgttcc ggatcaggcg 180

tgcgagctcg ggaatcaggg gtttcacaca tagcttcgtc gatttgaatt tgatgtacta 240

atggagtcta anggtggcaa aaagtctanc 270

<210> 834
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 834

tcgtctccct gagaggtgcc gggaccgagg aactggccga gtactaggta gagaatcggt 60

ttttcttgtc tcagcccggn gtctgctgcg tctggtggtg gtgaagggga gaaattcgtg 120

agatctgttc cggatcaggc gtgcgagctc gggaatcagg ggtttcacac atagcttcgt 180

cgatttgaat ttgatgtact aatggagtct aagggtggca aa 222

<210> 835
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 835

aaagaattcc ctcccctagc cgccgcngcc gctcgtctcc ctgagaggtg ccgggaccga 60

ggaactggcc gagttctagg tagagaatcg gttttgcttg tctcagcacg gggtctgctg 120

cgtctggtgg tggtgaaggg gagaaattcg tgagatctgt tccggatcag gcgtgcgagc 180

tcgggaatca ggggtttcac acatagcttc gtcgatttga atttgatgta ctaatggagt 240

ctaagggtgg caaaaatcta c 261

<210> 836
<211> 97
<212> nucleic acid
<213> Zea mays

<400> 836

tcagctgcgt ctaccacaat gagcatgaac gtatggngac atatctgtga acccattttg 60

tttatgaata agatttgttt ttntcgagtn aaaaaaa 97

<210> 837
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 837

gtctccctga gaggtgccgg gaccgaggaa ctggccgagt tctaggtaga gaatcggttt 60

tgcttgtctc agcacggggt ctgctgcgtc tggtggtggt gaaggggaga aattcgtgag 120

atctgttccg gatcaggcgt gcgagctcgg gaatcagggg tttcacacat agctcgtcga 180

tttgaatttg atgtactaat ggagtctaag ggtggcaaaa agtctagca 229

<210> 838
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 838

ganttccctc ccctagccgc cgccgccgct acgtctccct gagaggtgcc ggganccgagg 60

aactggccga gttctaggta gagaatcggt tttgcttgtc tcagcacggg gtctgctgcg 120

tctggtggtg gtgaagggga gaaattcgtg agatctgttc cggatcaggc gtgcgagctc 180

gggaatcagg ggtttcacac atagcttcgt cgatttgaat ttnatgtact aatggagtct 240

aagggtggca aana 254

<210> 839
<211> 493
<212> nucleic acid
<213> Zea mays

<400> 839

caaagaattc cctcccctag ccgccgncgn cgctcgtctc cctgaagaag gtgcccggga 60

ccgagggatt tggcccgagt tctaggtaag aagaaatcgg gttttacttg tctcaagccc 120

gggggtctgc ttgcgtctgg tggtgggtga aaggggaaga aattcgtgaa gatctgttcc 180

ggatcaggcg tgcgaanctc gggaatcagg gggtttcaca cataagcttc gtcgatttga 240

atttgatgta ctaaatggga agtctaaagg gtggcaaaaa gtctagcagt aagtccgttc 300

tatgatgtat gaaacttccc tttggctaca gcatttgaag gacgttcgac ctggccggan 360

gccttgaaga angttccagt ctgnttgntt acttcaactt gngccaaaaa accattctgg 420

atattccttt tgggntttcc tcaatctagt annttaanga nttcttttct gacacttttg 480

aatcttganc caa 493

<210> 840
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 840

angnacgcgt acgtnagctc gnaattcngc tcgagcggct cgagcnaaga attccntccc 60

ctagccgccg ccgncgccgc tcgtctccct gagaggtgcc ggnaccgagg aactggccga 120

gtactaggta gagaatcgnt ttttcttgtc tcagcccggg gtctgctgcg tctggtggtg 180

gtgaangggа gnaattcgtn agatctgttc cggatcaggc gtgcgagctc gggaatcagg 240

ggtttcacac atagcttcgt cgatttgaat ttgatgtact aatggagtct aagggt 296

<210> 841
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 841

tngccnnana nttccnnccc ctagccgccn ccgccgccgc tngtntccct gagaggtanc 60

cgggaccgat gaactngccg agtactaggt agagaatcgg tttntcttnt ctcagcccgg 120

ggtctgctnc ntctggtggt ggtgaagggg agaaattcgt ganatctgtt ccggancatg 180

cgtgngagct cnggaatcag ggtttcaca catagcttcg tcgatttgaa tntgatgtat 240

aatggatcta agggtngcaa naantctagc agtagtcgtn cnagntgnat ga 292

<210> 842
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 842

cgccgccgct catctcgccg agaggtgacg ggaccgagga actcgccgag ttctaagata 60

gagaatcgct tttcacagcc tggggtctgc tgcgtagggt ggtgttgaag gggagaagtt 120

taagatctgt tccacagatc acgcgtgcgc gctcgcgaat cgggggttcc acacatagct 180

tcgtcgtttt gaattgatgt actaatggag tctaaaggtg gcaagaagtc tagcatatcg 240

ttccatgatg tatg 254

<210> 843
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 843

gccaaagaat tccctcccct agccgccgcc gccgctcgtc tccctgagag gtgccgggac 60

cgaggaactg gccgagttct aggtagagaa tcggttttgc ttgtctcagc acggggtctg 120

ctgcgtctgg tggtggtgaa ggggagaaat tcgtgagatc tgttccggat caggcgtgcg 180

agctcgggaa tcaggggttt cacacatagc ttcgtcgatt tgaattgatg tactaatgga 240

gtctaagggt ggcaa 255

<210> 844
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 844

tcatctcgcc gagaggtgac gggaccgagg aactcgccga gttctaagat agagaatcgc 60

ttttcacagc ctggggtctg ctgcgtaggg tggtgttgaa ggggagaagt ttaagatctg 120

ttccacagat cacgcgtgcg cgctncgcga atcgggggtt ccacacatag cttcgtcgtt 180

tgaatttgat gtactaatgg agtctaaggg tggc 214

<210> 845
<211> 798
<212> nucleic acid
<213> Zea mays

<400> 845

gccacgcgtg cgncaaaaca acaatgnntn tnntttggag ggcttttgaa aaagcccctt 60

gggggatcaa cattcttctt gagggcnccc tggtcttttg tgggacccct catgggcgtg 120

ggttttgncg tgcccctctt ccaaggcccc agattgactc tgttctggga tctttgcacg 180

ggngcacaaa ttgtgtcccg agctcttcca acaagggatt tccgactcat atgtcctttc 240

tgaggcaaag cttgnttatc tatcctctga agattgtcat caaagacctg tggcactacc 300

aagctcctgc tcaccattcc aaagaatcct tgaacttgct tgaaaaactt gtctatgcca 360

ctttgctgct tgtgaaaata ctcccgtggg acggtcatct tttctgggng cacagncagg 420

ccccccacaa ggaacttctt ttgaaggaag ttgntgnact ttaaaccgct tcttttggcc 480

ggcctggaaa tctggggggg naatgcnttn tgtggaattg gggaatncca ncnaggaacc 540

tggacaanaa atnggnaccg ntttttaacn ccccttgatt nccccnagca acccaatggg 600

tnaaccttna aaagggccnt gactgggctg ggcnnnnnnn nnnnnnnnnn nnnnnnnnaa 660

naataatgtt gangggaaca caacttgggc caagggaaat ganaaacttt ttgnnttttg 720

aaaatatncc ccgaanggaa aacgngantt tantttaacc cggggttttc aggaaggggc 780

ccagggtttg ttttcnaa 798

<210> 846
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 846

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ttttcttgtc tcagcccngg gtctgctgcg tctggtggtg gtgaangga gaaattcgtg 120

aganctgtac cactcaggcg tgcgagctcg ggaatcaggg gtttcacaca tagcttcgtc 180

gatttgaatt tgatgtacna tggagtctaa gggtggcaaa aatctagncn tatcgttcta 240

ngattatnaa gccccctngg taaannat 268

<210> 847
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 847

gcngccgccg ccnctcgtct ccctgagagg tgccgggacc gaggaactgg ccgagtacta 60

ggtagagaat cggtttttct tgtctcagcc cggggtctgc tgcgtctggt ggtggtgaag 120

gggagaaatt cgtgagatct gttccggatc angcgtgcga gctcgggaat caggggtttc 180

acacatagct cgtcgatttg aatttgatgt acnaatggat cnaagggtgg caaaaagtct 240

agcagnagtc gtctatgatg tatgaagctc cccttg 276

<210> 848
<211> 185
<212> nucleic acid
<213> Zea mays

<400> 848

gcaagctacc tgtgacaaaa acgattccaa gaaaccactt cttgtgcttc ctccactggc 60

tgtctgtgca tcttgctcta aaacaatcgc agtcctgcaa gttgttgctg ttgctcctac 120

ccctgcctct gcaattgggt ttgagggata tgagaagcgc ctcgagatca gcttctatga 180

ggcac 185

<210> 849
<211> 519
<212> nucleic acid
<213> Zea mays

<400> 849

gnaagggatc tttnaaggng gggggggga aaanganaac tncgtaccgg tccggaattc 60

ccgggtcgac ccacgcgtcc gagagcttcg actcatatgt tctgtccgag tccagcctct 120

ttgtgtatcc gggacagggt tgttctgaag acctgtggga cgacgaagct gctgctcgcc 180

attcctcgca tccttgagct tgctgcaggg ctgtcactgc ctcttctttc agcgaagtac 240

tctcgtggga ccttcatctt ccccggcgcg cagcccgcgc cacaccgcag cttctcggag 300

gaggtatctg tgctgaacgc tttctttggt aacctcaagt ccggtggcaa tgcctacctg 360

atcggtgaac cgttcaagcc caacaagaag tggcatgtct actacgccac agaggagcct 420

gagcgtccta tggtgacgct tgagatgtgc atgacagagc ttgacgttaa gaaagctgct 480

gtgttcttca agaacttcac tggtggcaac ttnacntna 519

<210> 850
<211> 324
<212> nucleic acid
<213> Zea mays

<400> 850

atgagaagcg cctcgagatc acgttctctg actcgcctgt ctttgaggac ccttgtggtc 60

gtggcctgcg cgccctctcc cgtgagcaga tcgactcgtt tctggatctc gcacggtgca 120

ccatagtgtc acagctctcc aacgagagct tcgactcata tgttctgtcc gagtccagcc 180

tctttgtgta tccccacaag gttgttctga agacctgtgg gacgacgaag ctgctgctcg 240

ccattcctcg catccttgag cttgctgcag ggctgtcact gcctcttctt tcagcgaagt 300

actctcgtgg gaccttcatc ttcc 324

<210> 851
<211> 260
<212> nucleic acid

<213> Zea mays

<400> 851

gaagcgcctc gagatcacgt tctctgacgc gcctgtcttt gaggaccctt gtggtcgtgg 60

cctgcgcgcc ctctcccgtg agcagatcga ctcgtttctg gatctcgcac ggtgcaccat 120

agtgtcacag ctctccaacg agagcttcga ctcatatgtt ctgtccgagt ccagcctctt 180

tgtgtatccc cacaaggttg ttctgaagac ctgtgggacg acgaagctgc tgctcgccat 240

tcctcgcatc cttgagcttg 260

<210> 852
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 852

agcgcctcga gatcacgttc tctgacgcgc ctgtctttga ggacccttgt ggtcgtggcc 60

tgcgcgccct actcccgtga gcagatcgac tcgtttctgg atctcgcacg gtgcaccata 120

gtgtcacagc tctccaacga gagcttcgac tcatatgttc tgtccgagtc cagcctcttt 180

gtgtatccca caaggttgtt ctgaagacct gtgggacgac gaagctgctg ctcgccattc 240

ctcgcatcct tgagcttgct gcaggctgtc at 272

<210> 853
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 853

gcgcctcgag atcacgttct ctgacgcgcc tgtctttgag gacccttgtg gtcgtggcct 60

gcgcgccctc tcccgtgagc agatcgactc gtttctggat ctcgcacggt gcaccatagt 120

gtcacagctc tccaacgaga gcttcgactc atatgttctg tccgagtcca gcctctttgt 180

gtatccccac aaggttgttc tgaagacctg tgggacgacg aagctgctgc tcgccattc 239

<210> 854
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 854

cctgcgcgcn ctntcncgtg agcagatcga gtcgtttctg gatctcgcac ggtgcaccat 60

agtgtctcag ctctnccaan gagagctncg actcatatgt tctgtncgag tccagcctct 120

ttgtgtatcc ccacaaggnt gttctgaaga cctgtggnac gacgaagctg ctgctcgcna 180

ttcctcgcat ccttgagctt gctgcagggc tgtcantgcc tcttctttca gcgaagtact 240

ctcgtgggac cttcatcttc cccggcg 267

<210> 855
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 855

attggctttg agggctatga gangcgcctc gagatcacgt tctctgacgc gcctgtcttt 60

gaggacccctt gtggtcgtgg cctgcgcgcc ctctcccgtg agcagatcga ctcgtttctg 120

gatctcgcac ggtgcaccat agtgtcacag ctctccaacg agagcttcga ctcatatgtt 180

cagtccgagt ccagcctctt gtgtatcccc acaaggttgt tncgaagact gtgggacgac 240

gaagctgctg ctcgccattc ctcgcatcnt gagntgctgc aggctgtcat gcctc 295

<210> 856
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 856

caccatagtg tcacanctct ccaacgagag cttcgactca tatgttctgt ccgaatccag 60

cctctttgtg tatccccaca aggttgttct caagacctgt gggacnacga agctgctgct 120

cgccattcct cgcatccttg agcttgctgc agggctgtca ctgcctcttc tttcagcgaa 180

gtactctcnt gggaccttca tcttccccgg cgcgcagccg cgccacaccg cagcttctcg 240

gaggaggtat ctgtgctgaa cgcttt 266

<210> 857
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 857

cagcctcttt gtgtatcccc acaaggttgt tctgaagacc tgtgggacga cgaagctgct 60

gctcgccatt cctcgcatcc ttgagcttgc tgcagggctg tcactgcctc ttctttcagc 120

gaagtactct cgtgggacct tcatcttccc cggcgcgcan ccgcgccaca ccgcagcttc 180

tcggaggagg tatctgtgct gaacgctttc tttggtaacc tcaagtccgg tggcaatgcc 240

tacctgatcg gtgaaccgtt caagcccaac aagaagtggc atgtctacta cgccacagag 300

gagcctgagc gtccta 316

<210> 858
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 858

ggtatcttaa acttagaact cttcagcgtg catcatatac tcattacttc tatgaagcaa 60

ctgttggtgc tggcctccct atcattagca ctctgcgtgg tctcctagag acaggtgaca 120

agatattgcg cattgaaggg attttcagtg gaacgttaag ttatattttt aacaacttcg 180

aaggagcaag aacctttagt gatgttgttg ctgaagcaa 219

<210> 859
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 859

cagcactcca ggagtcagtg caatactttt tgatgcatta gcaaaggcaa acattaatgt 60

tcgagcaata gctcaaggtt gcagtgaata caatattact gttgtattga agcaacaaga 120

ttgtgtaagg gctctgagag ctgctcactc aaggttcttc ctctccaaaa ccacacttgc 180

tgttgggatc attggacctg gtttaattgg tggagcactc cttaaccagt tgaagaatca 240

gactgctgtt ctcaaggaaa atatgaacat tgatctgcgt gtcattggaa taactggctc 300

aagtacaatg cttttgagcg aca 323

<210> 860
<211> 310
<212> nucleic acid

<213> Zea mays

<400> 860

ctttctgata ttcctgtgaa gagccttgtg ccagaaacac ttgcagcatg ctcgtcagca 60

gatgaattca tgcagaagct accatccttt gacgaggact gggccaggca acgcagtgag 120

tgctgatgcn gcagacgaag tcctgcgtta cgttggagtg gtggatacgg tgaacaagag 180

gggacaggtg gagctacgta ggtacaagag ggaccacccg ttcgcgcant ctccggctcc 240

gacaacatca tcgcattcac cacctcgagg tacaaggagc agccgctaat cgtgcggngc 300

ccaggcgcgg 310

<210> 861
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 861

tgaacactct gtatgctttg ctgttccaga aaaggaagtt gcattggttt ctgcagcctt 60

gcatgctagg tttcgtgaag cattggcagc agggaggtta tctaaggttg aagtcattcn 120

taattgtagc atccttgcta ctgtcggcct gaggatggca agtacacctg gagtcagcgc 180

gaccctttttt gatgcactag ctaaggcaaa tnttaatgta agggcgatan tcaaggttgc 240

ag 242

<210> 862
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 862

tgaaaaacga cttgaaaaat ggttttctcg atgtccggct gagacaataa ttgctactgg 60

gtttattgcg agtacacctg aaaacatccc aacaacctta aaaagagatg gaagtgattt 120

ctctgcagcc ataattggtt cccttgttaa ggctcgccag gtgaccatct ggactgatgt 180

tgatggggta tttagtgcag atcccagaaa agttagtgag gctgtaatct taagcacatt 240

gtcgtatcag gaggcctggg aaatgtcata ttttggggca aatgtcttgc atccacgtac 300

tat 303

<210> 863
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 863

gtgaagtcag catatctttg acactggatc catcgaaact atggagttgt gaattggttc 60

agcacaaaaa tgaacttgat gatgtcattg aagagcttga gaagatagca gttgttcatc 120

tactgcagaa caggtcaata atatctttaa tttgaaatgt gcagaggtcg tctttgattc 180

ttgaaaaggc tttcaatgtt ctacgaagaa acggtgtcaa tgtccagatg atatcgcaag 240

gggcgtccaa ggtgaacatt tccttggtgg tccatgacag tgaggcaaaa cagt 294

<210> 864
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 864

gttgctacca gtgaagttag tgtttctgtg tcacttgatc catcaaagat ctggagtagg 60

gaactgatac agcaggaact tgaccatgta gttgaagagc ttgagaaaat agcaattgtt 120

cgtctacttc agcagagggc gataatttca cttatcggaa atgtggagca atcgtcnctc 180

atactagaaa agacgggacg tgtgctgagg aaaagtgggg ttat 224

<210> 865
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 865

tggagtggtg gatgtggtca gcaagaaggg gcaggtggag ctgcgagcct acaagagggn 60

cccacccgtt cgcgcactat ctggttccga caacatcata gccttcacca cctcgaggta 120

caaggatcag ccactgatcg tgcgaggtcc gggggctggt gcggaagtga ctgcaggagg 180

cgtcttctgc gacatactgc gcctgtcttc ctaccttggt gccccctcgt agtctgtcaa 240

<210> 866
<211> 243
<212> nucleic acid

<213> Zea mays

<400> 866

cttgggatta agagaaattc aggtttggaa agatgttgat ggtgttttaa catgtgaccc 60

aaatatccat cctaaggcaa aacctgtgcc atacttgaca tttgatgagg cagctgaact 120

tgcctatttt ggagcgcagg ttttgcatcc acaatcaatg cggccagcta gagaaggcga 180

tgtacctgtg agggttaaga atcttataac cgtcgngccc ctggtaccct tatcataaag 240

cng 243

<210> 867
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 867

gaaggtcata attcttgcaa gggaatctgg tttggggctt gaactttctg atattcctgt 60

acgaagtctt gtgccggang cttnaagtca tgtacctcag ccgacgaata catgcagaag 120

ttaccatctt ttgacgagga ttgggcaaga gagaggaaaa atgctgaagc tgcgggagaa 180

gttctgcggt atgttggagt ggtgnatgtg gtcncaaaaa gggccnaggt gaantnngcc 240

ctnaaagggg ggcccccnt ttggnnaaaa ntggtcncaa aaaaaa 286

<210> 868
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 868

aagagaagct acaaactgaa gcagaacctg ccaatcttga taagtttgtt catcatttgt 60

ctgagantca ctttttcct aacagagttt tggtagattg cacagcagat acaagtgttg 120

catctcacta ttatgattgg ctaaagaaag gaatccatgt catcactcca aacaagaaag 180

caaattcagg gccacttgac aggtatctta aacttagaac tcttcagcgt gcatcatata 240

ctcattactt ctatgaagca actgttggtg ctggc 275

<210> 869
<211> 241
<212> nucleic acid

<213> Zea mays

<400> 869

ctttagtgat gttgttgctg aagcaaaaaa agcaggatac acagaaccag atccaagaga 60

tgatctgtct ggtactgatg ttgccaggaa ggtcataatt cttgcaaggg aatctggttt 120

ggggctgagc tttctgatat tcctgtacga agtcttgtgc cagangcact taagtcatgt 180

acctcagccg atgaatacat gcagaagtta ccatcttttg acgaggattg ggcaagagag 240

a 241

<210> 870
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 870

atggattaat gatcctgcta tacctatagt cactggcttt cttggcaagg gatggagatc 60

tggtgcaata actanttggg caggggtggt agcgacttga cagctacaac cattggcaaa 120

gccttgggat taagagaaat tcaggtttgg aaagatgttg atggtgtttt aacatgtgac 180

ccaaatatcc atcctaaggc aaaacctgtg ccatacttga cattgatgag gcagctgaac 240

ttgcctattt ggagcgcagt tttgcatcca caatcaatgc ggccactaga ga 292

<210> 871
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 871

gggaatgccc aggcggggtt caccttcgtc atgaagttcg gcggctcgtc gctcgcgtca 60

gccgagcgga tgcgggangt ggccggcctc atccttagct tcctcgacga gatgcctgtc 120

gccgtcctct ccgccatggg gaagaccacc aataacctcn tcctaggacc ttccatttct 180

agctctcagc gcctgagtca gggtgctcga ttcttcgtta tagtaa 226

<210> 872
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 872

gtcattgatt cttgaaaagg cattcaacgt tctgcgaaga aatggtgtta atgtcnagat 60

gatctcacaa ggggcgtcca aggtgaacat atccttggta gtcaatgaca gtgaggcaaa 120

acagtgcgta caagccctcc attcagcgtt ctttgagaat ggattcttgt cggaggtaga 180

gggagctgac gttccccaga acggagcctc tctgaactca aatggcgctg tctatggaaa 240

ctagtcgact ctgcaactgc tttcttcaca atttgtgtac cattg 285

<210> 873
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 873

ccaaggcgtc cgaaatccct gagctcgctg tcatcaagga cctgcatctt aggacggttg 60

atgagctcgg tttagatagg tcgattgttt caggtttatt ggatgaattg gagcaacttc 120

ttaaaggagt tgctatgatg aaagagctga cccttaggac aagagattac cttgtttcct 180

ttggtgaatg tatgtcgaca agaatatttg ctgcatattt gaacaaactt gggaaaaaag 240

cacgccatat gatgcattga tatggcttat aaccaccgat gatttc 286

<210> 874
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 874

ttcacaaatg cggatattct tgaagccact taccctgctg ttgcgaagag gctacatgaa 60

gactggatgg atgaccctgc tattcctata gtcactggtt ttcttgggaa gggatgtaaa 120

tcatgtgctg tcaccacttt aaggcagggg tggtagtgac ttgacagcta caaccattgg 180

caaagccttg gggattaaga gaaatccagg ttggaaggat gtagatggtg tgtgacatgt 240

gatcctnata tatatggcaa atgctatanc ccgtgcctac ttgactttgg atg 293

<210> 875
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 875

actgccaagt cccttggcta tacagaacca gatccacgtg atgatctagg tggaatggat 60

gtcgctagaa aggcattgat cctggctagg cttcttgggc aacagataag catggagagt 120

atcaatgttg aggtttatat cctagtgaat taggacctga tgcagtgtcc acaaaggact 180

tcctgaaagt ggtttagtgc aattgacaag agcatggaag aaagaatcag agcagcatct 240

cgagaggaaa cgttctcgct acgtct 266

<210> 876
<211> 343
<212> nucleic acid
<213> Zea mays

<400> 876

ggctggttct aggacaaatg cttttaagtg atataggagt agatttgacc cagtggaaag 60

agaagctaca aactgaagca gaacctgcca atcttgataa gtttgttcat catttgtctg 120

agaatcactt tttccctaac agagttttgg tagattgcac agcagataca agtgttgcat 180

ctcactatta tgattggcta aagaaaggat ccatgtcatc actccaaaca agaagcaant 240

cagggccatt gacaggttct taancttgac tcttcagggg cataattatc atacttctan 300

gagnantgtg gnnngcccca nanatnnccn ngggtnnnan nag 343

<210> 877
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 877

gngatctngn gnantancta ncttgngnan ntgngnggtn cacttnacnn cnannnncat 60

tggcnanncn ttgagattaa ganatactcn tgttaggnaa gatgctgatg gtgntggaac 120

atgtgaccga gatatacatc ctaaagctga acctgancca tacttgacat ctngatgaat 180

cagctgaacn ngcctatttt ggagcgcagg aattgcatgc actatnnatg cggtcagngt 240

tgagaaggcg atntacctgt gagggctaat gaattnttat aactcgncta gnctanggta 300

cccttatcac taaaacntgn acgatatgag ttaagantgt tcagactngc attgtncttg 360

aaaatgaata ttnaatgctt gatatattca gtacagggta tgctttgcca agtaccggat 420

naataanncc cntttaaggg aa 442

<210> 878
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 878

gnncaagacn tgtgccatac ttgacatttg atgaggcagc tgaacttgcc tatnttggag 60

cgcaggtttt gcatccacaa tcaatgcggc cagctagaga aggcgatgta cctgtgaggg 120

ttaagaattc ttataaccgt cganccccctg gtacccttat cactaaagca agagatatga 180

gtaagactgt tttgactagc attgttttga aatcaaatat tacaatgctt gatatagtca 240

gcacacgcat gcttggccag tacggttttc tagctaaggt ttttt 285

<210> 879
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 879

gncaaaacct gtgccatact tgacatttga tgaggcagct gaacttggcc tattttggag 60

cgcaggtttt gcatccacaa tcaatgcggc cagctagaga aggcgatgta cctgtgaggg 120

ttaagaattc ttataaccgt cgagcccctg gtacccttat cactaaagca agagatatga 180

gtaagactgt tttgactagc attgttttga aatcaaatat tacaagcttg atatagtcag 240

cacacgcatg cttggccagt acggttttct agctaaggtt tt 282

<210> 880
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 880

gaaccagctg atattgatag ttttgttcat catttatccg ataatcacgt atttccaaac 60

aaagttttgg tggactgcac agcagataca agtgttgcat cccactatta taattggtta 120

aagaagggta ttcatgtcat cacaccaaat aagaaagcaa attctgggcc acttgatcag 180

tacctgaaat tgcggactct gcaacgtgcc tcgtacactc attactttta tgaagcaact 240

gttggtgctg gcctcccaat cattagtacc ttgcgaggtc ttctggagac gggtgacaag 300

atactgcgta ttgaggg 317

<210> 881
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 881

ggatcaggtt gctgctctca aggaaaatat gaacattgat ctgcgtgtca ttggaataac 60

tggctcaagt acaatgcttt tgagcagaca cgggaataga cttaacccag tggaaacaac 120

ttctaaaaaa ggaagcagaa ccagctgata ttgatagttt tgttcatcat ttatccgata 180

atcacgtatt tccaaacaaa gttttggtgg actgcacagc agatacaagt gttgcatccc 240

actattataa ttggttaaag aagggtattc atgtcatcac accaaataag aaagcaaatt 300

ctgggccact tgatc 315

<210> 882
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 882

aaccagctga tattgatagt tttgttcatc atttatccga taatcacgta tttccaaaca 60

aagttttggt ggactgcaca gcagatacaa gtgttgcatc ccactattat aattggttaa 120

agaagggtat tcatgtcatc acaccaaata agaaagcaaa ttctgggcca cttgatcagt 180

acctgaaatt gcggactctg caacgtgcct cgtacactca ttacttttat gaagcaactg 240

ttggtgctgg cctcccaatc atagtacctt gcgaggtctt ctggagac 288

<210> 883
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 883

ccaaaacgac acttgcagtt ggcatcattg gacctggttt aattggtaga acactcctta 60

accagctcaa ggatcaggtt gctgctctca aggaaaatat gaacattgat ctgcgtgtca 120

ttggaataac tggctcaagt acaatgcttt tgagcgacac gggaatagac ttaacccagt 180

ggaaacaact tctaaaaaag gaagcagaac cagctgatat tgatagtttt gttcatcatt 240

atccgataat cacgtatttc caaacaaagt tttggtggac tgcacagcag at 292

<210> 884
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 884

cactgggtta agtctattcc cgtggaaaca acttctaaaa aaggaagcag aaccagctga 60

tattgatagt tttgttcatc catttatccg ataatcacgt atttccaaac aaagttttgg 120

tggactgcac agcagataca agtgttgcat cccactatta taattggtta aagaagggta 180

ttcatgtcat cacaccaaat aagaaagcaa attctgggcc acttgatcag tacctgaaat 240

tgcggactct gcaacgtgcc tcgtacactc attactttta tgagg 285

<210> 885
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 885

cactgggtta agtctattcc cgtggaaaca acttctaaaa aaggaagcag aaccagctga 60

tattgatagt tttgttcatc atttatccga taatcacgta tttccaaaca aagttttggt 120

ggactgcaca gcagatacaa gtgttgcatc ccactattat aattggttaa agaagggtat 180

tcatgtcatc acaccaaata agaaagcaaa ttctgggcca cttgatcagt acctgaaatt 240

gcggactctg caacgtgcct cgt 263

<210> 886
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 886

atttaataat ttcgaaggaa caagggcatt cagtgatgtc gttgctgaag caaaagaggc 60

gggatacacn gaacctgacc caagagatga tctatctgga actgatgttg cccganaggt 120

cattatcctt gcaagggaat caggtttgag gcttgaactt tctgatattc ctgtgaagag 180

ccttgtgcca gaaacacttg cagcatgctc gtcagcagat gaattcatgc agaagctacc 240

atcctttgac gaggactggg ccaggcaacg catgatgct 279

<210> 887
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 887

tttantnntt tcgaaggaac aagggcattc agtgntgtcg ttgcngaagc aaaaganntg 60

ggatacactg aacctgaccc aaganntgat ctntctggaa ntgntgttgc ccgaaaggtc 120

attntccttg caagggaatc aggnttgagg cttgaacttt ctggntattc ctgtgaagag 180

ccttgngctn gaaacacttg cagcagctcg tcagcagaga gttcagcaga agctaccatc 240

ctttgacgag gactgg 256

<210> 888
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 888

gggagactgg atggatgacc ctgctattcc tatagtcact ggttttcntg gncagggatg 60

taaatcatgt gctgtcacca ctttaggcag gggtggtagt gacttgacag ctacaaccat 120

tggcaaagcc ttgggattaa gagaaatcca ggtttggaag gatgtagatg gtgtgttgac 180

atgtgatcct aatatatatg caaatgctat acccgtgccc tacttgactt ttgatgaggc 240

tgctgagctt gcctactttg gtgcacaggt tttgcatccc caatcaatgc gaccggctag 300

ggatggtgat attccagtga ga 322

<210> 889
<211> 105
<212> nucleic acid
<213> Zea mays

<400> 889

gtgatcctaa tatatatgca aatgctatac ccgtgcccta cttgactttt gatgaggctg 60

ctgagcttgc ctactttggt gcacaggtta nacatccccc agtca 105

<210> 890
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 890

gtgagtacaa cattactatt gtactgaagc aagaagactg cgtgcgggct ctgagagctg 60

cccactcaag gntcttcctc tccaaaacca cactggctgn tggcatcatt ggacctgggn 120

tgattggtcg cacattactt aatcagctga aggatcaggc tgctgtcctc aaggaaaata 180

tgaacattga tttgcgtgtc atgggaatag ctggttctag gacaatgctt ttaagtgata 240

taggagtaga tttgacccag tggaaagaga agctacnaa 279

<210> 891
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 891

gctatgcaaa tattaatgta agggcgatag ctcaaggttg cagtgagtac aacattacta 60

ttgtactgaa gcaagaagac tgcgtgcggg ctctgagagc tgcccactca aggttcttcc 120

tctccaaaac cacactggct gttggcatca ttggacctgg gttgattggt cgcacactac 180

ttaatcagct gaaggatcag gctgctgtcc tcaaggaaaa tatgaacatt gtttgcgtgt 240

catgggaata gctggttcta ggacaatgct tttaagtgat at 282

<210> 892
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 892

gttatccatg tttctgaaat cgaagagtgg aatatggtca aaagcctaca tatcaagacg 60

gtggatgaac ttggacttcc aagatctgta atacaagaca tgctagatga actggagcaa 120

ctattgaaag gtatcgctat gatgaaagag ctgacgccta ggaccagtga ctaccttgtt 180

tcatttggag aatgcatgtc caccaggatt ttttctgctt atttgaacaa aattcgtgtc 240

aaggcacggc agtatgacgc atttgatatt ggtttcatac aa 282

<210> 893
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 893

gttatccatg tttctgaaat cgaagagtgg aatatggtca aaagcctaca tatcaagacg 60

gtggatgaac ttggacttcc aagatctgta atacaagaca tgctagatga actggagcaa 120

ctattgaaag gtatcgctat gatgaaagag ctgacgccta ggaccagtga ctaccttgtt 180

tcatttggag aatgcatgtc caccaggatt tttctgctta tttgaacaaa attcgtgtca 240

aggcacggca gtatgacgca tttgatattg 270

<210> 894
<211> 493
<212> nucleic acid
<213> Zea mays

<400> 894

gngnnnnnng gnaantgttn anttngcccg ccagtaccga tccaagaatt cccgggtcga 60

cccacgcgtc cgatcagctt gggctagata gatcaattgt ttgtggtttg ttggatgaac 120

ttgaacaact tcttaaggga attgctatga tgaaagagct gactcttagg acacgagatt 180

atctagtttc atttggtgaa tgcatgtcta caagaatatt tgctgcactt ttaaacaaaa 240

ttggagtaaa agctcggcag tatgatgcat ttgatcttgg ctttataact accgatgatt 300

tcacaaatgc ggatattctg gaagcaactt atcctgctgt tgcaaggagg ctacatgtgg 360

aatggattaa tgatcctgct atacctatag tcactggctt tcttggcaag ggatggagat 420

ctggtgcaat aactaccttg ggcangggtg gtaatgactt gacagctaca accattggca 480

aagccttggg aat 493

<210> 895
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 895

aaaganctgn ctcttaggac acgagattat ctagttgcag tnggtgaatg catggctaca 60

agaanattgg cctgcacttt naaacaaaat tggagtaaaa gtctcggcag tatgatgcat 120

gtnatcttgg cttgataact accgatgatt tcacaaatgc ggntattctg gaagcaactt 180

atcctgctgt tgcaaggagg cgacatgtgg aatggattaa tgatcctgcn agacctatag 240

tcantggcnt tcttggcaag ggatggagat ctggtgcaat a 281

<210> 896
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 896

gcgcgggcgc ggaggtgact gcgggtggcg tcttctgcga catcctgcgg ctggcgtctt 60

accttggcgc tccttcttag agcttccact tacagttgtc aatttgaaga ggcagatgga 120

cagtgccctg catgatgcct ccgtgtttag gcttattatg gacttgctca aagttgttct 180

gaataagtgc caggaaataa ggcctctatc ttatttaggc ctctatcttc ggggtagctg 240

actaagtgtt gttatgctac ggaatccaga atctgtgaat tgaaatgaat gtaccgatg 299

<210> 897
<211> 454
<212> nucleic acid
<213> Zea mays

<400> 897

actttacttg gccngccagg tcaagatncc cgggtcgacc cacgcntcca ccgcttcngc 60

cctcncgctt tcgttgtcat gaggagcctc accgtggcaa gccgccaccc gggcgccgct 120

ttctctaccc gccgccgccc ccttcttcac cccgccgcag ccggaaggga ctcgaccttc 180

cagcggtgct ggcgatggga aaaaactcag gacagctcct tcgggagctc actaaggacc 240

agccgccttc caagaactgt gcacggagat attttgaaga atttgctcgc accaactgct 300

ggtgctgttt cagttgagca agctgaagct attgctgacc tcccaaaagg tgaaatgtgg 360

tcggtgcaca agtttggtgg cacatgcatg gggacctctg agagaattca caatgttgct 420

gataaaancc ctnnggattc cttcgaanaa ggaa 454

<210> 898

<211> 310
<212> nucleic acid
<213> Zea mays

<400> 898

ccgccctctc gctttcgttg tcatgaggag cctcaccgtg gcaagccgcc acccnggcgc 60

cgctttctct acccgccgcc gccccttct tcaccccgcc gcagccggaa aggactcgac 120

cttccagcgg tgctggcgat gggaaaaaac tcaggacagc tccttcggga antcactaag 180

gaccanccgc cttccaagaa ntgtgnacgg agatattttg aagnatttgc tcgcaccaac 240

tgctggtgct gtttcagttg agcaagctga agctattgct gacctcccaa aaggtgacat 300

gtggtcggtg 310

<210> 899
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 899

tatgatgtga caggnacttg atcatgtcgt tgaagagctt aaaaaatttg cagttgttca 60

tctgctgcaa cgtagatcga tcatctcact gatagggaat gtacagcgat cgtcattgat 120

tcttgaaaag gcattcaacg ttctgcgaag aaatggtgtt aatgtccaga tgatctcaca 180

aggggcgtcc aaggtgaaca tatccttggt agtcaatgac agtgaggcaa aacagtgcgt 240

acaagccctc cattcagcgt tctttgagaa tggatc 276

<210> 900
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 900

tgaattgatc cagcaggaac ttgatcatgt cgttgaagag cttaaaaaat ttgcagttgt 60

tcatctgctg caacgtagat cgatcatctc actgataggg aatgtacagc gatcgtcatt 120

gattcttgaa aaggcattca acgttctgcg aagaaatggt gttaatgtcc agatgatctc 180

acaaggggcg tccaaggtga acatatcctt ggtagtcaat gacagtgagg caaaacagtg 240

<210> 901

<211> 279
<212> nucleic acid
<213> Zea mays

<400> 901

ggagcgtcac ccggaagtat gggcccgcgg ccgtcgccag cggcgccgta gttgtcgaca 60

acagctccgc gttccggatg gngcccgang tgccgctcgt catccccgag gtcaaccccg 120

aggccatggc gaacgtccgc ctcgggcagg gggcgattgt ggcaaatccg aattgctcga 180

ccatcatctg cntcatggct gccacgccgc tccatcgcca cgctaaggtg ttaaggatgg 240

ttgtcagcac ataccaagca gcaatggtgc gggtgctgc 279

<210> 902
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 902

cagtgggtag gattcgtcag gacttgtccc tggatgataa ccgagggttg gacatatttg 60

tgtgtggtga tcagatacgt aaaggtgccg cactcaatgc cgttcagatt gctgaaatgc 120

tgctgaagtg aatgcgactt aaccctcttg tccctccctc cctccctgtc cctaattgct 180

ctgatcaaat gctggactgt actctgatta gtttgtcctc nattttggtc gcctgttctg 240

tattctgcgg tgct 254

<210> 903
<211> 496
<212> nucleic acid
<213> Zea mays

<400> 903

ggtnnnnnaa ctcnccccgc nccggtacgg tncaaaattc ccggnncgac ccacgcgtca 60

caagatgttg tgtacacgga ttggatagat cgtccacaac ctcgattgga ccgtcataag 120

gaaatgggtt tacagtgacg ctgggaagag tgagggaatg ttccgtgatg gacataagtt 180

ggtattgttt ggacataaca cagtggtagg agctgcgggt ggttcgatta ttantgaaag 240

ttgagtgtcg ccaaagggtt tattgcacaa aaaggaaaac aaagtgtata tgcggagtat 300

ctcgtcacta gtgtgtgtca ctagacagaa tagtgtgttt gtgttgtttg tgtcgtgttt 360

tccaatgaan gacattgacc actagaacta tgtgaaaaaa aaaannagtc aacacaaaga 420

ntannaaaaa aggncggccg ctctagagga tncaagctta cgtacccgtc atnacgtcan 480

aacccttcna aaatgt 496

<210> 904
<211> 435
<212> nucleic acid
<213> Zea mays

<400> 904

gtaactgcga cttgcatacg ggttcctgtg atgcgcgcac atgctgaaag tgtnaagnta 60

cagtttgaaa agccacttga tgagcgcgta tgctcctcaa gtaggcctta atgagaactc 120

aaagagagag ttctgggaag gcctggagga catggttagt agtgtgccag ttggcgagaa 180

gctcttcata ggaggagatc tcaatggcca tgatactgca agagaaattt tgagagcagc 240

tcctggtgtt accattattg atgaccgagc ttccaatcgc tttcctacac ctctggaggt 300

atcagacaaa gatgacgtan cantgggtag gattcgtcag gacttgtcct ggatggtaac 360

cganggtttg gacatatttg tgtgttggtg atcagatacg taaangcgcc ggactnaatg 420

ccgtcaaaat tggtt 435

<210> 905
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 905

atcaccagag tgaattagca gaagaattgg ctgaaaggaa gcatctcttc tgtgcacgcc 60

cacaaacatt gggagagacc atccgggcaa tggacctaga gacactggtt cctatgagcc 120

aggggatgcc aaaccagtcg tcaccctgat caacagattt cttggcttcc agttgattga 180

cgaatctatt cggttgttct caatccatgt ggattagatg gtattgcgtc ggtttaattc 240

catagcaagt caaaatacat cctaaaccca ctcaatccac tccaatc 287

<210> 906
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 906

ccgcgaccga tcgagcgaan anccccttccc gcgccgacgc cgaaacccta gctcctctta 60

cgccatggcc accgtgtcgc tcactccgca ggcggtcttc tccaccgagt ccggcggcgc 120

cctgggcttc tgccaccatc ctccgcttcc cgccaaactt cgtacgccag ctcagcacca 180

aggcacgacg caactgcagc aacatcggcg tcgcgcagat cgtcgccgcc gcgtggtccg 240

actgcctcgc tgctcgccgc ctccgcggcg gcggatgtca gcgcaattcc taacgctaag 300

gttgcgg 307

<210> 907
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 907

aaagtacatt gctggacaca acgatgttat tggaggatgc gtcagtggca gagtgantgg 60

tttccaaagt ccntatttat caccatgtgg ttggtggtgt ctaaccccga atgctncgta 120

ctancctncn ncngaaacct ncatctccgt gtgcatgctg aataaacntg cttncggatg 180

gccantttttt agaggaacat ctaaagatgc cgngctacta tcctggctgc tagccaaccc 240

tgaacatcca ttgcccagag ncaat 265

<210> 908
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 908

attttcagta aatttggtat cgaacacaca ctgaacatcc ctgcaacttt tgttgttaag 60

angttgtttg tttaggacta taatctgtct agattatata atccaacaaa taatgtgtta 120

tttgctggat tatataatct ggacagatta tattctcaaa caaacacccg ctaattcttc 180

caggggacaa tcggagcgtg gaaacgatgc caaccaggac atactttaca accagaacgt 240

ccaaagtgta gtgccgtacc attcgag 267

<210> 909
<211> 96
<212> nucleic acid

<213> Zea mays

<400> 909

tacaaatcca tttctcagat gcattgatat tgaacatgta tccaaatatg tgccataggc 60

aagggannngt ngccttngaa tngccngnan ttcncg 96

<210> 910
<211> 352
<212> nucleic acid
<213> Zea mays

<400> 910

accaaatcat gcatggtact gaaatgagat gcaattccaa ttctattgtt tggatgtcac 60

tgaattgtac gttctaattc cacgcaatac cgaggnnctg angctttgta ttgggagagg 120

atgttctagt tatagtctaa ttctagggaa ttaggcctct gatnccaaat ctcaattcca 180

cgagcaanca aacaacagaa tttagaaaaa ctgattctaa ttcccaattc tgtgctccaa 240

tatctatatc caaccggggt gttagtatta tgtagtttca ctggctcttc tagttgtgct 300

ttatganatc tttgngacct gaagataaat ttgagttttc aggaaggnac tt 352

<210> 911
<211> 503
<212> nucleic acid
<213> Zea mays

<400> 911

gnnnnnnnnn ggnngaangt ccagccggnc ntaccggtcc canaaattcc cggntcnacc 60

acgcgtccgg agatcttcat caggggaaat tcgcatggta tgggagacta cggcccgtta 120

cctttgaacc ctcgtaggaa gtcttgagaa cccttgcatg cattcgctgt tgtatgctgc 180

catgctgttg aatttagctg tactacacca gatagtgata cccgaactca cggagttaat 240

ggaaccggat agaaagctgc ccatgtagtt tggtgtttgt tgcttacgtt gtggatttac 300

tgtagtgact tgtctaatgc tccgtttctc cgtttggtta tcgaccatat tggaggcatg 360

gaattaaaat aagttcaata ccaaatcaaa tatagtattg aaatgagatg taattcaatt 420

ctattgtttg gatgtcgctg atttggaatt aaaaaanaan nannnaannn nnnnnnnnnn 480

nnnnnnnnnn nnnnnnnnnn nna 503

<210> 912
<211> 497
<212> nucleic acid
<213> Zea mays

<400> 912

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ggtttttaan gggggggagg aagggaaagc tttcccggtc cggattcccg ggtcgaccca    60

cgcgtcccga gttaaaacat cattttggng gtgggnaaat atggaaccta tttcangtta   120

nttggcctng nttggatttg ancccgtgng gtggagtaat ctaatactcc gcttgggatg   180

tcgatattgg agaggatgga attgaattgg ggttgaatac caaatcaggc atgatattga   240

aatgagatat aatttcaatt ctattgtttg gatgtcactg aattggagtt tggaattatg   300

cggtctaatt ctaggcaata ccgagggggt gaggctttgt attggaagag gggtttcta    360

gttatagtct aatttcaggg aattgggcct ctgattccaa atctcaattc cacatgcaac   420

gaatcaacat aatttangaa agctgattcc aattctcaat tctgtgattc aatctctaca   480

tccaaacggg gtataag                                                  497
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<210> 913
<211> 548
<212> nucleic acid
<213> Zea mays

<400> 913

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gnnnngcgca gagtttgttn gggngnnggg gggaaggang natntgctnn tccggtccgg    60

aattcccggg tcgacccacg cgtccgcgcg agcggccccc tttttttttt tttttttttt   120

ttttttttta ctaaaaccta tngnctgang ntcaggctaa tgacattttg tctttacaat   180

actgtgatgc aataaaactg ggcaaaccat tgataccacc gtatacagta actcaatacc   240

atccaattct atgaggatta aaaatgtatt ggaatggatt ggtatgtatt ttgacttgct   300

ataaatttaa accaactnaa taccatccaa ttcacttaga ttaacggtga aacgaacaag   360

gcctaagggg agtggtaaca gtctaacatc attgtacaac agcctttccg aagcccatag   420

acattgtgag acaagatccg taaaccatga atcgttcttc acttaggatg accatnttag   480

ctggtcacga aatggtaccg ggaatcacaa atntttnaac gtcccaaang aacgatcctg   540

gangctgt                                                            548
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<210> 914
<211> 463
<212> nucleic acid
<213> Zea mays

<400> 914

cataaataag tcgtgttttg aagggttctn ntgaataaga taaaggctta gatacattna 60

gntgtatgaa cgggttnttt ttaggtgtat ctagtgtttg gagaaccgca acatgatgtc 120

tatgttgtac atgacctaag tgcatttctc taccaccagc actcttgccc aagcatggta 180

gaccatttgt gtttaatgtt cattacatgc taataaaaga tactggtggg aagggtaagg 240

ttatgtttta ggcacaccaa acaagaagga gtctaangaa attaagnnac caaggtctct 300

agtngagtaa gggggtagtc tttccattaa aattgactgg ctaaaattta agctcgggct 360

cttatgngng ttnggngaac ctatgagaac cgacngnaag gnanttgggn aatcagtnag 420

tanttggaac naaacggtnt ggtaaagtga accctttttc cgt 463

<210> 915
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 915

agctgaagga tttcttcaag cagtaggtgt gaagacctga agatcagctt tatctctctt 60

ttgttcctgc tagggccttc tcggttattc caattccatg tggattgaag tgtattaaaa 120

tggattttga cttgttatgg atttaaatca acttaatacc actcaatcca catggattat 180

tggtgaaaca aacaagccct agtcgaaatt cttgttaagt tggtagtttg tcagacccga 240

aatagagttt tttgggtttc gaatgga 267

<210> 916
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 916

attttgaggc atggcagaca actgaggtcg aaatagcgtg gtagcttgga tctgcacatc 60

tatatgattg agggcctggt gtttaggatt ataatctgcc cagattatat aacctatctt 120

attttgaact aagtgttagt tcaaaataag ttagattata taatatggac aaattatatt 180

cccaatcaaa caggctatga ttggacttac tgatacccat tgagtagaac tggatcttgg 240

acagtntncg gggaaaacgg atggacctta attgaaaatt tgcg 284

<210> 917
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 917

ctgaggtcga aatagcgtgg tagcttggat ctgcacatct atatgattga gggcctggtg 60

tttaggatta taacctgccc agattatata acctatctta tttgaactaa gtgttagttc 120

aaaataagtt agattatata atctggacaa attatattcc caatcaaaca ggctatgatt 180

ggacttactg atacccattt gagtagaact gatcttgaca ggtatccgag aaaacgatga 240

ccttaat 247

<210> 918
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 918

caactggagg tcgaaatagc gtggtagctt ggatctgcac atctatatga ttganggcct 60

ggtgtttagg attataatct gcccagatta tataacctat cttattttga actaagtgtt 120

agttcanaat aagttagatt atataatatg gacaaattat attcccaatc aaacaggcta 180

tgattggact tactgatacc catttgagta gaactgatct tgacaggtat ccgagaaaac 240

gntgacctta attg 254

<210> 919
<211> 508
<212> nucleic acid
<213> Zea mays

<400> 919

agangttttn nggntggggn ggnnganaag tttaccggtc cggattcccg ggtcgaccca 60

cgcgtccgct gggaagaagg atagccacgg atgctatcac cacgccggta gtgaacacgt 120

cggcctactg gttcaacaac tcgcaagagc taatcgactt taaggagggg aggcatgcta 180

gcttcgagta tgggaggtat gggaacccga ccacggaggc attagagaag aagatgagcg 240

cactggagaa agcagagtcc accgtgtttg tggcgtcagg gatgtatgca gctgtggcta 300

tgctcagcgc acttgtccct gctggtgggc acattgtgac caccacggat tgctaccgca 360

agacaaggat ttacatggaa aatgagctcc ctaagagggg aatttcgatg actgtcatta 420

ggcctgctga catggatgct ctccaaaatg cgttggacaa caataatgta tctcttttct 480

tcacggagac tnctacaaat ccatttct 508

<210> 920
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 920

ggagactccc acaaatccat ttctcagatg cattgatatt gaacatgtat caaatatgtg 60

ccatagcaag ggagcgttgc tttgtatcga cagtactttt gcctccccta tcaatcagaa 120

ggcactgact ttaggcgctg acctagttat tcattctgca acaaagtaca ttgctggaca 180

caacgatgtt attggaggat gcgtcagtgg cagagatgag ttggtttcca aagtccgtat 240

ttatcaccat gtggttggtg gtgttctaaa cccgaataac actgctcttc ggatggccca 300

gtttttagag gaacat 316

<210> 921
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 921

ttcgatgact gtcattaggc ctgctgacat ggatgctcta caaaatgcgt tggacaacaa 60

taatgtatct cttttcttca cggagactcc cacaaatcca tttctcagat gcattgatat 120

tgaacatgta tcaaatatgt gccatagcaa gggagcgttg ctttgtatcg acagtacttt 180

tgcctcccct atcaatcaga aggcactgac tttaggcgct gacctagtta ttcattctgc 240

aacaaagtac attgctggac acaacgatgt tattggagga tgcgtcagtg gcagagatga 300

<210> 922

<211> 271
<212> nucleic acid
<213> Zea mays

<400> 922

cttgttccgg ctggtgggca cattgtgacc accacggatt gctaccggaa aacaaggatt 60

tacatggaaa ctgagctccc caagagggga atttcgatga ctgtcattag gcctgctgac 120

atggatgctc tacaaaatgc gttggacaac aataatgtat ctcttttctt cacggagact 180

cccacaaatc catttctcag atgcattgat attgaacatg tatcaaatat gtgccatagc 240

aagggagcgt tgctttgtat cgacagtact t 271

<210> 923
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 923

cacaaatcca tttctcagat gcattgatat tgaacatgta tcaaatatgt gccatagcaa 60

gggagcgttg ctttgtatcg acagtacttt tgcctcccct atcaatcaga aggcactgac 120

tttaggcgct gacctagtta ttcattctgc aacaaagtac attgctggac acaacgatgt 180

tattggagga tgcgtcagtg gcagagatga gttggtttcc aaagtccgta tttatcacca 240

tgtggttggt ggtgttctaa acccga 266

<210> 924
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 924

tgctcagtgc acttgttccg gctggtgggc acattgtgac cacacggatt gctaccggaa 60

aacaaggatt tacatggaaa ctgagctccc caagagggga atttcgatga ctgtcattag 120

gcctgctgac atggatgctc tacaaaatgc gttggacaac aataatgtat ctcttttctt 180

cacggagact cccacaaatc catttctcag atgcattgat attgaacatg tatcaaatat 240

gtgccatagc aagggagcgt tgc 263

<210> 925

<211> 238
<212> nucleic acid
<213> Zea mays

<400> 925

gcgtaacctg ctcggctccg acgccagcct cgccgtccac gcgggggaga ggctgggaag 60

aaggatagcc acggatgcta tcaccacgcc ggtagtgaac acgtcggnct actggttcaa 120

caactcgcaa gagctaatcg actttaagga ggggaggcat gctagcttcg agtatgggag 180

gtatgggaac ccgaccacgg aggcattaga gaagaagatg agcgcactgg agaaagca 238

<210> 926
<211> 332
<212> nucleic acid
<213> Zea mays

<400> 926

gccgcaactg cagcaacatc ggcgtcgcgc agatcgtcgc cgccgcgtgg tccgactgcc 60

ccgccgcctc cgcggcgcgg aggtcagcgc aattcccaac gctaaggttg cgcaaaccga 120

ccgccgtcgt cttggccgag cgtaacctgc tcggctccga cgccagcctc gccgtccacg 180

cgggggaag gctgggaaga aggatcgcca cggatgcgat caccacaccg gtagtgaaca 240

cgtcggccta ctggttcaac aactcgcaag agctaatcga ctttaaggag gggaggcatg 300

ctagcttcga gtatgggagg tatgggaacc cg 332

<210> 927
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 927

ctatgctcag tgcacttgtt ccggctggtg ggcacattgt gaccaccacg gattgctacc 60

ggaaaacaag gatttacatg gaaactgagc tccccaagag gggaatttcg atgactgtca 120

ttaggcctgc tgacatggat gctctacaaa atgcgttgga caacaataat gtanccсttt 180

tcttcacgga gactcccaca aatccatttc tcagatgcat tgatat 226

<210> 928
<211> 228
<212> nucleic acid

<213> Zea mays

<400> 928

gatgactgtc attaggcctg ctgacatgga tgctctacaa aatgcgttgg acaacaataa 60

tgtatctctt ttcttcacgg agactcccac aaatccattt ctcagatgca ttgatattga 120

acatgtatca aatatgtgcc atagcaaggg agcgttgctt tgtatcgaca gtacttttgc 180

ctcccctatc aatcagangg catgacttta ggcgctgacc tagttatt 228

<210> 929
<211> 501
<212> nucleic acid
<213> Zea mays

<400> 929

gnnagnnaga ggttgatacg gaacgggggn ttaatggaat gctcgtaccg gtccggaatt 60

cccgggtcga cccacgcgtc cgggttattg gaggatgcgt cagtggcaga gatgagttag 120

tttccaaagt tcgnatttac caccatgtag ttggtggtgt tctaaacccg aatgctgcgt 180

accttatcct tcgaggtatg aagacactgc atctccgtgt gcaatgtcag aacgacactg 240

ctcttcggat ggcccagttt ttagaggagc atccaaagat tgctcgtgtc tactatcctg 300

gcttgccaag tcaccctgaa catcacattg ccaagagtca aatgactggc tttggcggtg 360

ttgttagttt tgaggttgct ggagactttg atgctacgag gaaattcatt gattctgtta 420

aaataccctа tcatgcgcct tcttttgaag ctgtgagagc ataattgatc agcctgccat 480

catgtcctac tgggattcaa a 501

<210> 930
<211> 489
<212> nucleic acid
<213> Zea mays

<400> 930

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ctgatcaggt tcagcattgg agtggaggat tttgaggacc ttaagaatga tcttgttcag 120

gccctcgaga agatataagc tccaatccat ttgcattaat aaagttatga ggtgatggtt 180

gtctggatct tgtagagatt tgtgatgata catgagctgt tgactgcgat taagttctct 240

tgtgcttatt ttattctttg aattcaataa gctgtggttg ctgcatcttg catgtagtgt 300

tggacttaat tttacttgtc aaattacaat agtttggtcc catgtacttg tgtccgcgcc 360

tccgcggttg tgcccccaag tgtttttgtg tcatttgctg tgtaatgtga gattaagggc 420

acgatgtcct taatcaccat aataaatcca agccttaaat gtaaggattc tgggttggga 480

atgaanaac 489

<210> 931
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 931

tttaaaatac cctatcatgc gccttctttt ggaggctgtg agagcataat tgatcagcct 60

gccatcatgt cctactggga ttcaaaggag cagcgggaca tctacgggat caaggacaac 120

ctgatcaggt tcagcattgg tgtggaggat ttcgaggatc ttaagaacga tctcgtgcag 180

gccctcgaga agatctaagc actctaatca gtttgtattg acaaaatcat gaggtgatgg 240

ctgtcttgga tcttgtcaag atctgtgaca atgatatgag ctgatgactg cgaataagtt 300

ctcttttgct tatttatccg tcaaatccat aagctgtgat 340

<210> 932
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 932

ctgcatctcc gtgtgcaatg tcagaacgac actgctcttc ggatggccca gtttttagag 60

gagcatccaa agattgctcg tgtctactat cctggcttgc caagtcaccc tgaacatcac 120

attgccaaga gtcaaatgac tggctttggc ggtgttgtta gttttgaggt tgctggagac 180

tttgatgcta cgaggaaatt cattgattct gttaaaatac cctatcatgc gccttctttt 240

ggaggctgtg agagcataat tgatcagcct gccatcatgt cctactggga ttcaaaggag 300

cag 303

<210> 933
<211> 299
<212> nucleic acid

<213> Zea mays

<400> 933

tttacattta aggcatggat ttattatggt gattaaggac atcgtgcctt aatctcacac 60

tacacagcaa atgacacaaa aacactaggg gcacaaccgc ggaggcgcgg acacaagtac 120

atgggaccaa actattgtaa tttgacaagt aaaattaagt ccaacactac atgcaagatg 180

cagcaaccac agcttattga attcaaagaa taaaataagc acaagagaac ttaatcgcag 240

tcaacagctc atgtatcatc acaaatctct acaagatcca gacaaccatc acctcataa 299

<210> 934
<211> 345
<212> nucleic acid
<213> Zea mays

<400> 934

gggaacatct aaagattgcc cgtgtctact atcctggctt gcctagccac cctgaacatc 60

acattgccaa gagtcaaatg actggctttg gtggtgtggt tagttttgag gttgctggag 120

actttgatgc cacaaggaaa ttcatcgatt ctgttaagat accctatcat gccccttctt 180

tnggaggctg tgagagcata attgatcagc ctgctatcat gtcctactgg gattcaaagg 240

agcagaggga catctatggg atcaaggaca acctgatcag gttcagcatt ggagtggagg 300

ttttgaggac cttaagaatg atcttgttca ggccctcgag aagat 345

<210> 935
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 935

agtcaaatga ctggctttgg cggtgttgtt agttttgagg ttgctggaga ctttgatgct 60

acgaggaaat tcattgattc tgttaaaata ccctatcatg cgccttcttt tggaggctgt 120

gagagcataa ttgatcagcc tgccatcatg tcctactggg attcaaagga gcagcgggac 180

atctacggga tcaaggacaa cctgatcagg ttcagcattg gtgtggagga tttcgaggat 240

cttaagaacg atctcgtgca ggccctcgag aaga 274

<210> 936

<211> 306
<212> nucleic acid
<213> Zea mays

<400> 936

gttggtttcc aaagtccgta tttatcacca tgtggttggt ggtgttctaa acccgaatgc 60

tgcgtacctt atccttcgag gcatgaaaac acttcatctc cgtgtgcaat gtcagaataa 120

nactgctctt cggatggccc agtttttaga ggaacatcta aagattgccc gtgtctacta 180

tcctggcttg cctagccacc ctgaacatca cattgccaag agtcaaatga ctggctttgg 240

tggtgtggtt agttttnagg ttgctggaga ctttgatgcc acaaggaaat tcatcgattc 300

tgttaa 306

<210> 937
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 937

ccaccatgta gttggtggtg ttctaaaccc gaatgctgcg taccttatcc ttcgaggtat 60

gaagacactg catctccgtg tgcaatgtca gaacgacact gctcttcgga tggcccagtt 120

tttagaggag catccaaaga ttgctcgtgt ctactatcct ggcttgccaa gtcaccctga 180

acatcacatt gccaagagtc aaatgactgg ctttggcggt gttgttagtt ttgaggttgc 240

tggagacttt gatgctacga ggaaa 265

<210> 938
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 938

ctattggtgg tgtggttagt tttgaggttg ctggagactt tgatgccaca aggaaattca 60

tcgattctgt taagatacnc tatcatgccc cttctttcgg aggctgtgag agcataattg 120

atcagcctgc tatcatgtcc tactgggatt caaaggagca gagggacatc tatgggatca 180

aggacaacct gatcaggttc agcattggag tggaggattt tgaggacctt aagaatgatc 240

ttgttcaggc cctcgagaag atataagctc caatccattt gcattaataa agttatgagg 300

tgatggttgt ctggatcttg ta 322

<210> 939
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 939

cattgccaag agtcaaatga ctggctttgg cggtgttgtt agttttgagg ttgctggaga 60

ctttgatgct tacgagggaa attcattgat tctgttaaaa taccctatca tgcgccttct 120

tttggaggct gtgagagcat aattgatcag cctgccatca tgtcctactg ggattcaaag 180

gagcagcggg acatctacgg gatcaaggac aacctgatca ggttcagcat ggtgtggagg 240

attcgaggat cttaagaacg atctcgtgca ggccctcgag aag 283

<210> 940
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 940

ctttagatgt tcctctaaag attgcccgtg tctactatcc tggcttgcct agccaccctg 60

aacatcacat tgccaagagt caaatgactg gctttggtgg tgtggttagt tttgaggttg 120

ctggagactt tgatgccaca aggaaattca tcgattctgt taagataccc tatcatgccc 180

cttctttcgg aggctgtgag agcataattg atcagcctgc tatcatgtcc tactgggatt 240

caaaggagca gagggacatc tatgggatca aggacaacct ga 282

<210> 941
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 941

gggattcaaa ggagcagagg gacatctatg ggatcaagga caacctgatc aggttcagca 60

ttggagtgga ggattttgag gaccttaaga atgatcttgt tcangccctc gagaagatat 120

aagctccaat ccatttgcat taataaagtt atgangtgat ggttgtctgg atcttgtaga 180

gatttgtgat gatacatnag ctntttactg ngaataagtt ctcttgngct taatttantc 240

tttgnattca ataanctgtn ggttgcttgg aaaaaaaaaa aannntnnnn nnnnnntnnn 300

tttttnnnnt nnnnt 315

<210> 942
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 942

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ggcatgaaaa cacttcatct ccgtgtgcaa tgtcagaata acactgctct tcggatggcc 120

cagtttttag aggaacatct aaagattgcc cgtgtctact atcctggctt gcctagccac 180

cctgaacatc acattgccaa gagtcaaatg actggctttg gtggtgtggt tagttttgag 240

gttgctggag actttgatgc c 261

<210> 943
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 943

ttagggcgct gacctagtta ttcattctgc aacaaagtac attgctggnc acaacgatgt 60

tattggagga tgcgtcagtg gcanagatga gttggnttcc naagncgtat ttatcaccat 120

gtggttggtg gtgtcctaaa cccgaatgct gcgtacctta tccttcgagg catgaaaaca 180

cttcatctcc gtgtgcaatg tnagaataac actgctcttc ggatggccca gtttttagag 240

gaacatctaa agattgcccg tgtctactat cctggct 277

<210> 944
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 944

tgcgtcagtg gcagagatga gttagtttcc aaagttcgta tttaccacca tgtagttggt 60

ggtgttctaa acccgaatgc tgcgtacctt atccttcgag gtatgaagac actgcatctc 120

cgtgtgcaat gtcagaacga cactgctctt cggatggccc nngttttaga ggagnatcca 180

aagatttcgc gnggtcaagt atccgggctt gccaagtcac cctgaacatc acattgccaa 240

gagtcaaatg 250

<210> 945
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 945

aggaaatcat cgattctgtt aagaaaccct atcatgcccc ttctttcgga ggctgtgaga 60

gcataattga cagcctgcta tcatgtctac tgggattcaa aggagcagag gggcatctat 120

gggatcaagg acaaccttga caggtcagca ttggagtgga ggattttgag gaccttaaga 180

atgatcttgn tcaggccctc gagaagatat aagctccaat ccatttgcat taataaaggt 240

atgaggtgat gggtggctgg atcttgagag attgngatga tncatgagct gttgctgcna 300

tta 303

<210> 946
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 946

ctatcatgcc ccttctttcg gaggctgtga gagcataatt gatcagcctg ctatcatgtc 60

ctactgggat tcaaaggagc agagggacat ctatgggatc aaggacaacc tgatcaggtt 120

cagcattgga gtggaggatt ttgaggacct taagaatgat cttgttcagg ccctcgagaa 180

gatataagct ccaatccatt tgcattaata aagttatgag gtgatggttg ctggatctt 239

<210> 947
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 947

atttatcacc atgtggttgg tggtgttcta aacccgaatg ctgcgtacct tatccttcga 60

ggcatgaaaa cacttcatct ccgtgtgcaa tgtcagaata acactgctct tcggatggcc 120

cagtttttag aggaacatct aaagattgcc cgtgtctact atccnggctt gcctagccac 180

ccngaacatc acattgccaa gagtcaaatg actggctttg gtggtgtggt tagttttgag 240

gttgctgg 248

<210> 948
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 948

gatcagcctg ctatcatgtc ctactgggat tcaaaggagc agagggacat ctatgggatc 60

aaggacaacc tgatcaggtt cagcattgga gtggaggatt ttgaggacct taagaatgat 120

cttgttcagg ccctcgagaa gatataagct ccaatccatt tgcattaata aagttatgag 180

gtgatggttg tctggatctt gtagagattt gtgatgatac atg 223

<210> 949
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 949

ggagactttg atgccacaag gaaattcatc gattctgtta agataccota tcatgcccct 60

tctttcggag gctgtgagag cataattgat cagcctgcta tcatgtccta ctgggattca 120

aaggagcaga gggacatcta tgggatcaag gacaacctga tcaggttcag cattggagtg 180

gaggattttg aggaccttaa gaatgatctt gttcaggccc tcgagaagat ataagc 236

<210> 950
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 950

gctctgtggc ttataaacag ggattcaaag gagcagaggg acatctatng gatcaaggac 60

aacctgatca ggttcagcat tggatggagg attttgagga ccttaagaat gatcttgttc 120

aggccctcga gaagatataa gctccaatcc atttgcatta ataaagttat gaggtgatgg 180

t 181

<210> 951

<211> 178
<212> nucleic acid
<213> Zea mays

<400> 951

cacaacgatg ttattggagg atgcgtcagt ggcagagatg agttggtttc caaagtccgt 60

atttatcacc atgtggttgg tggtgttcta aacccgaatg ctgcgtacct tatccttcga 120

ggcatgaaaa cacttcatct ccgtgtgcaa tgtcagaata acactgctct tcggangg 178

<210> 952
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 952

ancgaanacn gctccccgcg ccgccgccaa aaccctagct tctcctactc catggccact 60

gtctcgctca ccccgcaggc tgtcttctcc acggagtccg gtggcgccct ggcctctgct 120

accatcctcc gctttccgcc aaactttgtc cgccagctta gcaccaaggc acgccgcaac 180

tgcagcaaca tcggcgtcgc gcagatcgtc gccgccgcgt ggtccgactg cnccgcngcc 240

tccgcggcgc ggaggtcagc gcaattccca acgctaaggt tgcgcaaccg tccgcngtcg 300

tcttggcc 308

<210> 953
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 953

gccacctccc cgaaagctgc cgcgaccgat cgagcgaagn ncggctcccc gcncccgccg 60

ccaaaaccct agcttctcct actccatggc cactgtctcg ctcaccccgc aggctgtctt 120

ctccacggan tccggtggcg ccctggcctc tgctaccatc ctccgctttc cgccaaactt 180

tgtccgccag cttagcacca aggcacgccg caactgcagc aacatcggcg tcgcgcagat 240

cgtcgccgcc gcgtggtccg actgccccg 269

<210> 954
<211> 276
<212> nucleic acid

<213> Zea mays

<400> 954

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ctgcaaaatg ctgaagggtc gggtctggca ccttttgact gctggctttg cttgagggga   60
atcaaaacca tggctctgcg ggtggagaaa caacaggcta atgcccagaa gattgctgaa  120
ttcctggcgt ctcacccgag ggtcaagcaa gtaaactacg ctgggcttcc tgaccatcct  180
gggcgagctt tacactattc ccaggcnaag gganccggct ctgttctcag ttttcccacc  240
ggntaaatgg cccntcnaaa gnaggtgggg ggaacc                            276
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<210> 955
<211> 440
<212> nucleic acid
<213> Zea mays

<400> 955

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cgagagtaga cgatcagaac caccatatat gtcctcacca gcaagttgtg ccaagaaatg   60
gaatagttgt aaaacgagta gatacaacga aaattagtga tgtggtgtct gcaattggac  120
cctccactag actggtttgg ctcgaaagtc ccacgaaccc tcgtcagcaa attactgaca  180
ttaagacaat ctcagagata gcgcattctc atggtgctct tgttttggtt gacaacagca  240
tcatgtctcc agtgctctcc cgtcctatag aactgggagc tgatatcgtg atgcactcgg  300
ctaccaaatt tataacggga catagtgatc ttaagggctg ggaaatcttg cagtgaaagg  360
tganaatttg ggctaaaaga aggtaagggt ttctgcaaaa tgcctgaaag ggncgggtcc  420
gggnaccttt tgactggctg                                              440
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<210> 956
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 956

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cgtcgtggag accaccaagt acttcagcgt aacagtcagc ttcgggagcg tgaagtccct   60
catcagcctg ccgtgcttca tgtcccacgc atcaatccct gcctcggtcc gcgaggagcg  120
tggcctaacc gacgacctcg tccggatatc ggtcggcatc gaggatgtcg aggacctcat  180
cgccgatctg gaccgcgcgc tcagaactgg cccggtgtag acatcgccga tccttaggtc  240
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atgtcaagct atcttttgat gattcattgg ttgactgctt gcg 283

<210> 957
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 957

caagtacttc agcgtaacag tcagcttcgg gagcgtgaag tccctcatca gcntgccgtg 60

cttcatgtcn cacgcatcaa tccctgcctc ggtccgcgan gagcgtggcc taaccgacga 120

cctcgtccgg atatcggtcg gcatcgagga tgtcgaggac ctcatcgccg atctggaccg 180

cgcgctcaga actggcccgg tgtagacatc gccgatcctt aggtcatgtc aagctatctt 240

ttgatgattc attggttgac tgcttgcgtg atgataataa tgggaatgtt gcttggatac 300

gccgctgcta naaaaaaact gngtcnagnn acngggnnnc 340

<210> 958
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 958

gcattctcat ggtgctcttg ttttggttga caacagcatc atgtctccag tgctctcccg 60

tcctatagaa ctgggagctg atatcgtgat gcactcggct accaaattta tagcgggaca 120

tagtgatctt atggctggaa ttcttgcagt gaagggtgag agtttggcta aagaggtagg 180

gtttctgcaa aangctgaag ggtcgggtct ggcacctttt gactgctggc tttgcttgag 240

gggaatcaaa accatgg 257

<210> 959
<211> 521
<212> nucleic acid
<213> Zea mays

<400> 959

ggnnnagggg ctnnngtntn tgacntntac ttnntggcat gccgtaccgg tccggaattc 60

ccgggtcgac ccacgcgtcc gggtgtctgc aattggaccc tccactagac tggtttggct 120

cgaaagtccc acgaaccctc gtcagcaaat tactgacatt aagacaatct cagagatagc 180

acattctcat ggtgctcttg ttttggttga caacagcatc atgtctccag tgctctcccg 240

tcctatagaa ctgggagctg atatcgtgat gcactcggct accaaattta tagcgggaca 300

tagtgatctt atggctggaa ttcttgcagt gaagggtgaa aagtttggct aaagaggtan 360

ggtttctgca aaatgctgaa ngggtcgggt ctggcacctt ttgactgntg gctttgcttg 420

aagggaatca aaaccatggc tntgcnggtg gagaaacaac aggctaatgc ccagaagatt 480

gctgaatttc tggggtntta cccganggtc aaagcaagta a 521

<210> 960
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 960

atcgtgatgc actcggctac caaatttata gcgggacata gtgatcttat ggctggaatt 60

cttgcagtga agggtgagag tttggctaaa gaggtagggt ttctgcaaaa tgctgaaggg 120

tcgggtctgg caccttttga ctgctggctt tgcttgaggg gaatcaaaac catggctctg 180

cgggtggaga aacaacaggc taatgcccag aagattgctg aattcctggc gtctcacccg 240

agggtcaagc aagtaaacta cgctg 265

<210> 961
<211> 148
<212> nucleic acid
<213> Zea mays

<400> 961

atatcgtgat gcactcggct accaaattta tagcgggaca tagtgatctt atggctggaa 60

ttcttgcagt gaagggtgag agtttggcta aagaggtagg gtttctgcaa aatgctgaag 120

ggtcgggtct ggcacctttt gactgctg 148

<210> 962
<211> 453
<212> nucleic acid
<213> Zea mays

<400> 962

ggctgggcgc tcgctgacgg tgatcgcagg cgcctccggc ggctccgaac gagatctgag 60

cgcctccgca gtctccgtgg aggccctgga ctccgtcgcc tccgattctg acttagagac 120

gaaggagccc agtgtgtcga cgatgctgac gagcttcgag aactcgttcg acaagtatgg 180

ggctctgagc acaccgctgt accagaccgc cacctttaag cagccttcag ctacagatta 240

tggaacttat gattacacta gaagtggtaa ccctactcgt gatgttctcc agagcctcat 300

ggctaagctt gagaaagcag atcaagcatt ctgcttcacc agcgggatgg cggcgttagc 360

tgcagtaaca caccttcttc angctggaca agaaatagtt gctggtgang acatatatgg 420

tggttctgat cggtctactt ttgcaagttg tgc 453

<210> 963
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 963

cagcgcctcc gcagtctccg tggaggccct ggactccatc gcctccnatt ctgacttaga 60

gacgaaggag cccagtgtgt cgacgatgcn nacgagnttc gagaactcgt tcgacaagta 120

tggggctctg agcacaccgg tgtaccagac cgccaccttt aagcagcctt cagntacaga 180

ttatggaact tatgattaca ctagaagtgg taaccctact cgtgatgntc 230

<210> 964
<211> 212
<212> nucleic acid
<213> Zea mays

<400> 964

ccgtgctgga caccaacatc ctctgggtga accccgactg cggantcaag acccgaaagt 60

acacggaggt caagcccgcc ctgaccaaca tggtctccgc tgctaactca ttcgcaccca 120

gctngccagc gccaatgagc nctttttgc tttntcgttg ggaggnggcn tnttanttct 180

ntttttnnaa nanagggccc cccttttttt nt 212

<210> 965
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 965

ggnccaaaca ccaagttctc ctatgcttct cacaaggctg ttaacgaata taaggaggnt 60

aaggngctcn gtgttganan cgtgcnagta nttgttngnc tagtnntgta gctgtngatc 120

tcaaagcctg ccaagggtat ggagaacgga tncccnctgg cttgccctta ctaggacgat 180

nctcccngtc tacaaggaag tgnntggnnn aattnaaatg nagcnnnggg ttccaggatt 240

cantttnang agcccgattg tgncngcnca tgaat 275

<210> 966
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 966

caagacccta acatctctga gcagtgtgac tgcttatggt tttgatcttg tccgtggttg 60

ggcttgtcac gagtgctggt ttccctgctg gaaagtacct ctttgctggn gttgtggatg 120

gacgcaacat ctgggctgat gatcttgcta catcnctnag naccncaagt cnnntgantn 180

tgnttttggg aagnaangct tgnnganacaa ctgctgcgcg tnaggcacng cgcntgnnnc 240

tngtaaanaa caat 254

<210> 967
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 967

cgatatggnt gagtacttcg gtgagcagct ctccggtttt gcgttcactg ccaattgctg 60

ggtgcagtct atnggtcaag gtgcgtcaag cctccgatca tctacggtga cgtgagccgg 120

cccaacccca tgaccgtttc tngtcgaaga cggcacagag catgacgtct cgcccaatga 180

aggggatgct gactggncat cacatctcac tgtccttcgt cggattnaca gcgaggttgn 240

gantgtacag angtcttgga tcaagaagga gngaggnctt gagctgtgta tccgtaccaa 300

cgcgagtnnt gaa 313

<210> 968
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 968

ggangtngag natnttgagg ctgntgcgat tcaggcgatc cngattgatg aggcngntct 60

aagggagngn ttggcctgcg cangttatag catgcantct acctgcactg cgctgtccnc 120

tctatcngaa tcaccnnctn cagantccan nacncnaacc agatccacac acatatgtgc 180

tagtnaaact ntaacnanat tatnttngga atcatcgaca tggacgcaga tgtgatcacc 240

atcgagaact cccgtccgac gagaagctac tttccgtgtt ccgngagggn gtgaagtacg 300

gagctgggat cng 313

<210> 969
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 969

caaggccaaa aaagatctct gaggagggan tacgtcactg ncatcaagga ggaaatcaag 60

gnaggtcgtt aaggggnaag aagagcttga cattgatgtg cttgtgcatg gcnagcctga 120

gagaaacgat atggttgagt acttcggtga gcaactctcg gtttttcntt nactgncaat 180

ggctnnntnc aanntantng nnnaaggnnc ntnaagnctn na 222

<210> 970
<211> 534
<212> nucleic acid
<213> Zea mays

<400> 970

agntnntnnn tggnngggga aggtatgnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nncgngctcg acaccaacat nctctgggtg 120

aaccctgact gtggtctcaa gacacgcacg tncacagagg tcaagcccgc ctgaccaaca 180

tggtctctgc accaagctca tncgcaccna acttgncagc nngaaatgag gtcctngata 240

gntccatggt ctgatagcnc ggaatgagcc agntgttttg aataatttgg gtgntacccc 300

ctgnncnatg gnggaagtgn taggttaggc tctcattggn gggatacgcc gntacaagat 360

gtgttttaag nnnggagtgn gagnttttct ttgngntatg nntctgggng tatgtttnac 420

gctttgntta taacagaagn tgaaatncgc anngttgcta tacttnngcc aagtnaccaa 480

agctgaccng angaanaact gcagngcacc cttacacacc aanggnggaa acgg 534

<210> 971
<211> 435
<212> nucleic acid
<213> Zea mays

<400> 971

ccacgcgttc gcngacgcgt gcgggaacna ccngtctaag ttngagacat nctacnaant 60

nncnattgca atcaaaaagg aggttgagga tcttgaggct gatggtattc aggtgatcca 120

aatcnatngg gcanctgtaa taggaggntc tggcactacn caagttacat natgcattct 180

acctgnactg tnctgtccac tntttnaaga tcacnaactg nngatttnaa gacaccacnc 240

agatncacac cnacatgtgc tantcnaact tcaacnacat catatactcc attatcgaca 300

tggatgccga tntgatcacn atcgagaact cccggttntg actagaanct actgtccnga 360

ntttcgtgan ggtatgaagt acggagctgg cattgaacct ggtgtctact acattcatct 420

cctaggattc ccttc 435

<210> 972
<211> 430
<212> nucleic acid
<213> Zea mays

<400> 972

cccactcttc cnnccactct tncgngnttt angacaaact tgtcatatna ncttcctggg 60

ggctcattca caccgntgng gatcttctta acnanactaa tcttgacacc gaaattaant 120

cttgncttgc ttttgctgcc cagaaagctg tngaggtnna tgctcttgct aatgcattgg 180

ctgntcaaaa agatnangct tacttcgcan caaatgcttc tgctcatcct cgannaaann 240

ctcaccccgt gtgaccaatn aaaaantcca taangctnct gntgctntca aagctcttac 300

cacctccgtg ngaccaacat taactgctag attggatgcc ccatcaaaaa naatcttaac 360

cttcccattc cttccancac tacaatcggn tccatccaca aacccgttna acctcatnaa 420

gatccccngt 430

<210> 973
<211> 266
<212> nucleic acid

<213> Zea mays

<400> 973

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ttcgacttca ggcccgggat gatcagcatc aacctcgacc tgnnngaagn gcggcaacaa    60

nttcatcaag accgccgcct aacggccact tcggccgtga cgacgccgac nttcacctgg   120

gaggtggtga agcccctnaa gttcgacaag gcatcggntt aaggttggga gtgtcactgt   180

ggncatgagg actancttcc tctggctctt ctgttacctg naagattgct gctgntggat   240

gagtgtgttt gatcatgact ggctgc                                        266
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<210> 974
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 974

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gttcactgcc aacggatggg tgcaatccta tggatcacgc tgtgtgaagc cacccattat    60

ctacggtgat gtcagccggc cgaaccccat gactgttttc tggtccaaga tggcacagag   120

catgacccct cgtcccatga agggaatgtt gactggtccg gtcacaatcc tcaactggtc   180

attcgtcagg aacgaccagc ctaggtttga gacatgctac caaatagctc ttgcaatcaa   240

aaaggaggtt gaggatcttg aggctgctgg tattcaggtg atccagatcg atgaggcagc   300

tct                                                                 303
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<210> 975
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 975

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caacggatgg gtgcaatcct atggatcacg ctgtgtgaag ccacccatta tctatggtga    60

tgtcagccgg ccgaacccca tgactgtntt ctggtccaag atggcacaga gcatgacccc   120

tcgtcccatg aagggaatgt tgactggtcc ggtcacaatc ctgaactggt cattcgtcag   180

gaacgaccag cctaggtttg agacatgcta ccaaatagct cttgcaatca aaaaggaggt   240

tgaggatctt gaggctgctg gtattcaggt gatccagatc gatgaggcag ctctaa       296
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<210> 976

<211> 279
<212> nucleic acid
<213> Zea mays

<400> 976

cactgccaac ggatgggtgc aatcctatgg atcacgctgt gtgaagccac ccattatcta 60

tggtgatgtc agccggccga accccatgac tgttttctgg tccaagatgg cacagagcat 120

gacccctcgt cccatgaagg gaatgttgac tggtccggtc acaatcctga actggtcatt 180

cgtcaggaac gaccagccta ggtttgagac ntgctaccaa ntagctcttg cantcaaaaa 240

ggaggttgag gntcttgagg ctgctggtat tcaggtgat 279

<210> 977
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 977

ggaacggncg agnacgcgtg ggngtncagc cggccgaacc ccatnactgt tttctggtgc 60

aagacggcac agagcatgac cgctcgtccc atgaagggaa tgttgactgg tccagtcaca 120

atcctcaact ggtcatttgt caggaacgat cagcctaggt ttgagacatg ctaccaaata 180

gctcttgcaa taaaaaagga ggttgaggat cttgaggctg 220

<210> 978
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 978

cctgaacttg gcccaagcac caagttcaca tacgcttctc acaaggctgt ttctgagtac 60

aaggaggcaa aggcgctcgg cattgataca gtcccagtgc ttgttggacc agtgtcatac 120

ttgctcctct ctaagcctgc caagggtgtg gagaaatctt tctctcttct ttnacttctt 180

ggtagcattc ttcccatcta caaggaggtt gttgctgagc tgaaggcagc tggtgcttca 240

tggattcaac ttgatgagcc taccettgtt aaagaccttg atgctcncga attgg 295

<210> 979
<211> 259
<212> nucleic acid

<213> Zea mays

<400> 979

cttctcacaa ggctgtttct gagtacaagg aggcaaaggc gctcggcatt gatacagtcc 60

cagtgcttgt tggaccagtg tcatacttgc tcctctctaa gcctgccaag ggtgtggaga 120

aatctttctc tcttctttca cttcttggta gcattcttcc catctacaag gaggttgttg 180

ctgagctgaa ggcagctggt gcttcatgga ttcaacttga tgagcctacc cttgttaaag 240

accttgatgc tcacgaatt 259

<210> 980
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<212> nucleic acid
<213> Zea mays

<400> 980

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ccagtgtcat acttgctcct ctctaagcct gccaagggtg tggagaaatc tttctctctt 120

ctttcgcttc ttggcagcat tcttcccatc tacaaggagg ttgtttctga actgaaggca 180

gctggtgctt catggattca gtttgatgag cctacccttg ttaaagacct tgatgttcac 240

gaattgggca gcattctctt cagcatatgt gaactagagt cggcatctct ggattgaatg 300

tg 302

<210> 981
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 981

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gaatgtgctt atcgagacat actttgctga cattcctgct gagtcctaca agaccctcac 180

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tcttatcagg agcagttccc ctctgggaag tacctcttcg ctgg 284

<210> 982

<211> 314
<212> nucleic acid
<213> Zea mays

<400> 982

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agaccttgat gctcacgaat tggccgcatt ctcttcagca tatgctgaac tggagtcatc 120

gttctctgga ttgaatgtgc ttatcgagac atacttcgct gacattcctg ctgagtccta 180

caagaccctc acatcaatga gtgggtgtga ctgcctacgg nttcgatctt aaccgtngag 240

ccaagaccct tgatcttatc aggagcagct tcccctctgg gaagtacctc ttcgtggtgt 300

tgtagatgga cgca 314

<210> 983
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 983

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ctcacaaggc tgtttctgag tacaaggagg caaaggcgct cggcattgat acagtcccag 120

tgcttgttgg accagtgtca tacttgctcc tctctaagcc tgccaagggt gtggagaaat 180

ctttctctct tctttcactt cttggtagca ttcttcccat ctacaaggag g 231

<210> 984
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 984

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accagtgtca tacttgctcc tctctaagcc tgccaagggt gtggagaaat ctttcncnct 120

tctttcacnt cttggtagca tncntcccat ctacaaggag gttgtngcng agcngaaggc 180

agcnggtgct tcatggattc aacttgatga gcctaccctt gttaaagac 229

<210> 985
<211> 300
<212> nucleic acid

<213> Zea mays

<400> 985

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ccttgatgct cacggaattg gccgcattct cttcagcata tgctgaactg gagtcatcgt 180

tctctggatt gaatgtgctt atcgagacat acttcgctga cattcctgct gagtccctac 240

aagaccctca catcattgag tggtgtgact gcttacggtt tcgatcttat ccgtggagcc 300

<210> 986
<211> 177
<212> nucleic acid
<213> Zea mays

<400> 986

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ttctgaactg aaggcagctg gtgcttcatg gattcagttt gatgagccta cccttgttaa 120

agaccttgat gttcacgaat tggcagcatt ctcttcagca tatgctgaac tagagtc 177

<210> 987
<211> 145
<212> nucleic acid
<213> Zea mays

<400> 987

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ccttgttaaa gaccttgatg ctcacgaatt ggccgcattc tcttcagcat atgctgaact 120

ggagtctngt tctctggatt gaatg 145

<210> 988
<211> 189
<212> nucleic acid
<213> Zea mays

<400> 988

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tcttcagcat atnctgaact ggagtcatcg ttctcnggat tgaatgtgct atcgagacan 120

acttcgctga catnctgctg agtcctacaa gaccctcaca tcatgagtgg tgtgatnctt 180

acggtttcg 189

<210> 989
<211> 532
<212> nucleic acid
<213> Zea mays

<400> 989

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gattcccggg tcgacccacg cgtccgcgga cgcgtgggta caggcttact tcgcagcaaa 120

tgctgctgct caggcctcga ggaaatcctc accccgtgtg accaatgaag aagtccagaa 180

ggctgctgct gctctcaagg gctctgacca ccgccgtgcg accaacgtta gtgctagatt 240

ggatgcccag cagaagaagc ttaacctccc catccttccc accactacaa tcggttcgtt 300

cccacaaacc gttgagctca ggagggtccg ccgtgagtac aaggcaaaaa agatctctga 360

ggaggaatac gtcactgcca tcaaggagga aatcaacaag gtcgttaagc tccaagaaga 420

gcttgacatt gatgtgcttg tgcatggcga gcctgagaga aacgatatgg ttgagtactt 480

cggtgagcag ctctccggtt ttgcgttcac tgccaatggc tgggtgcagt ct 532

<210> 990
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 990

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aatgaagaag tccagaaggc tgctgctgct ctcaagggct ctgaccaccg ccgtgggacc 120

aacgttagtg ctagattgga tgcccagcag aagaagctta acctccccat ccttcccacc 180

actacaatcg gttcgttccc acaaaccgtt gagctcagga gggtccgccg tgagtacaag 240

gcaaaaaaga tctctgagga ggaatacgtc actgccatca aggaggaaat caacaaggtc 300

gttaagcttc aagaagagct tgacattgat gtgcttgtgc atggcgagcc tgagagaaac 360

gatatggttg agtacttcgg tgagcagctc ttcggttttg cgttcactgg caatggctgg 420

gtncagtctt atgggtcaag g 441

<210> 991
<211> 524
<212> nucleic acid
<213> Zea mays

<400> 991

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ttcccgggtc gacccacgcg tccgatccag gacaccaccc agatccacac ccacatgtgc 120

tactccaact tcaacgacat catncactng atcatcgaca tggacgcgga cgtgatcacc 180

atcgagaact cgcggtccga cgagaagctg ctctccgtgt tccgtgaggg tgtcaagtac 240

ggcgcgggca tcggccccgg tgtctacgac atccactccc ccaggatccc gtcggccgag 300

gagatcgccg accgcatcga caagatgctg gccgtgctgg acaccaacat cctctgggtg 360

aaccccgact gcggcctcaa gacccgcaag tacacggagg tcaagcccgc cctgaccaac 420

atggtctccg ctgctaagct cattcgcacc cagctcgcca agcgccaaag tgagcacctt 480

tttttgcctt tttcgtttcc gaggagggcg tcgtcgatgc caat 524

<210> 992
<211> 436
<212> nucleic acid
<213> Zea mays

<400> 992

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acttcaacga catcatccac tcgatcatcg acatggacgc ggacgtgatc accattgaga 120

actcgcggtc cgacgagaag ctgctctccg tgttccgcga gggcgtcaag tacggcgcgg 180

gcatcggccc cggtgtctac gacatccact cccccaggat cccgtcggct gaggagatcg 240

ccgaccgcat cgacaagatg ctggcggtgc tggacaccaa catcctctgg gtgaaccccg 300

actgcggcct taagacccgc aagtacacgg aggtcaaagc ccgcctgacc aacatggtct 360

ncgncgctaa gctcatncgc acccagntcg ccancgccaa gtgancacct tttttttgg 420

cctttttngn ttccga 436

<210> 993
<211> 330
<212> nucleic acid

<213> Zea mays

<400> 993

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catcagtgcc atcaaggaag aaatcagcaa ggttgtcaag atccaagagg agcttgacat   180
tgatgtgctt gtgcatggag agccagaaag aaatgacatg gttgagtact tcggtgagca   240
attatctggt tttgcattca ctgccaacgg atgggtgcaa tcttatggat cacgttgtgt   300
gaagccaccc attatctatg gcgatgtcag                                     330
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<210> 994
<211> 438
<212> nucleic acid
<213> Zea mays

<400> 994

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aaggaagtcg aggatcttga ggctggtggt attcaggtta tccaaatcga cgaggctgca   180
ctgagagaag ggctgccgct ccgcaaggct gaacatgcat tctacttgga ctgggctgcc   240
actccttcag aattaccaac tgcgagatcc angacaccac ccagatccac acccacatgt   300
gctacttcaa cttcaacgac atcatncact cgatcatcga catggacgcc gacgtgaaca   360
ccattgagaa cttgcgggcc gacnagaaac ttntnttccg ngttncncga aggccgtnaa   420
gtccgggncc gggcatnt                                                  438
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<210> 995
<211> 469
<212> nucleic acid
<213> Zea mays

<400> 995

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actggtcatt cgtcaggaac gaccagccta ggtttgagac atgctaccaa atagctcttg   120
caatcaaaaa ggaggttgag gatcttgagg ctgctggtat tcaggtgatc cagatcgatg   180
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aggcagctct aagggagggt ctgccactac gcaagtcaga gcatgcattc tacctggact 240

gggctgtcca ctctttcagg atcaccaact gcggagtcca ggacaccacc cagatccaca 300

cccacatgtg ctactccaac ttcaacgaca tcatccactc catcatcgac atggatgccc 360

gatgtgatca cgatcgagaa ctcccggtct gaccagaagc tactgtccgt cttncgtgag 420

ggtgtgaaat accggaactg gcattggccc tggtgtctac gacattcat 469

<210> 996
<211> 353
<212> nucleic acid
<213> Zea mays

<400> 996

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cacccacatg tgctactcca acttcaacga catcatccac tccatcatcg acatggatgc 120

cgatgtgatc acgatcgaga actcccggtc tgacgagaag ctactgtccg tcttccgtga 180

gggtgtgaag tacggagctg gcattggccc tggtgtctac gacatccact ctcctaggat 240

tccctccacc gaggagatcg cagaccgcgt cgagaagatg ctcgccgtgc tcgacaccaa 300

catcctctgg gtgaacctga ctgtggtctc aagacacgca atacacggan gtc 353

<210> 997
<211> 452
<212> nucleic acid
<213> Zea mays

<400> 997

gaaatcaaca aggtcgttaa gcttcaagaa gagcttgaca ttgatgtgct tgtgcatggc 60

gagcctgaga gaaacgatat ggttgagtac ttcggtgagc agctctccgg ttttgcgttc 120

actgccaatg gctgggtgca gtcttatggg tcaaggtgcg tcaagcctcc gatcatctac 180

ggtgaccgtg agccgcccca accccatgac cgttttctgg tcgaagacgg cacagagcat 240

gacgtctcgc ccaatgaagg ggatgctgac tggcccagtc acaatcctca actggtcctt 300

cgtccggaat gaccagccga ggtttgagac ttgctaccag atccgctctt gcgatcaaga 360

aggaaagtcg aggatcttga agctggtggg tattcaaggg tatccaaatc gaccagggct 420

tgcactnaaa gaaanggctt nccgnttcgn aa 452

<210> 998
<211> 484
<212> nucleic acid
<213> Zea mays

<400> 998

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cactcgatca tcgacatgga cgcggacgtg atcaccatcg agaactcgcg gtccgacgag   120

aagctgctct ccgtgttccg tgagggtgtc aagtacggcg cgggcatcgg ccccggtgtc   180

tacgacatcc actcccccag gatcccgtcg gccgaggaga tcgccgaccg catcgacaag   240

atgctggccg tgctggacac caacatcctc tgggtgaacc ccgactgcgg cctcaagacc   300

cgcaagtaca cggaggtcaa gcccgccctg accaacatgg tctccgctgc taagctcatt   360

cgcacccagc tcgccagcgc caagtgagca ccttttttttg cctttttcgt ttccgaagaa   420

gggcgtcgtc natgccaatt ttgtttccaa taaacaaggn tnccccccn tttnccnccg   480

ttnt                                                                484
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<210> 999
<211> 353
<212> nucleic acid
<213> Zea mays

<400> 999

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cgagatccag gacaccaccc agatccacac ccacatgtgc tactccaact tcaacgacat   120

catccactcg atcatcgaca tggacgcgga cgtgatcacc attgagaact cgcggtccga   180

cgagaagctg ctctccgtgt tccgcgaggg cgtcaagtac ggcgcgggca tcggccccgg   240

tgtctacgac atccactccc ccaggatccc gtcggctgag gagatcgccg accgcatcga   300

caagatgtgg cggtgtggac accaacatcc tctgggtgaa cccgattgcg gct          353
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<210> 1000
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1000

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tacctggact gggctgtcca ctctttcagg atcaccaact gcggagtcca ggacaccacc 120

cagatccaca cccacatgtg ctactccaac ttcaacgaca tcatccactc catcatcgac 180

atggatgccg atgtgatcac gatcgagaac tcccggtctg acgagaagct actgtccgtc 240

ttccgtgagg gtgtgaagta cggagctggc attggccctg gtgtctacga catccactct 300

cct 303

<210> 1001
<211> 347
<212> nucleic acid
<213> Zea mays

<400> 1001

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tgacaaacga ggaggtccaa aaggctgcag ctgctttgaa gggttctgac nnccgccgtg 120

ctactactgt tgctgctaga ttggatgctc agcagaaaaa gctcaacctt cctgtccttc 180

ccacaaccac aattgnntca ttccctcaga ctgtggaact caggagggtc cgtcgtgagt 240

acaaggcaaa gaagatctcc gaggaggaat acatcagtgc catcaaggaa gaaatcagca 300

aggttgtcaa gatccaagag gagcttgaca ttgatgtgct tgtgcat 347

<210> 1002
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1002

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ggttgtcaag atccaagagg agcttgacat tgatgtgctt gtgcatggag agccagaaag 120

aaatgacatg gttgagtact tcggtgagca attatctggt tttgcattca ctgccaacgg 180

atgggtgcaa tcttatggat cacgttgtgt gaagccaccc attatctatg gcgatgtcag 240

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catgaaggga atgttgact 319

<210> 1003

<211>	379
<212>	nucleic acid
<213>	Zea mays

<400>	1003

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gactaagctt gacagcgaga ttaagtcttg gcttgctttt gctgcccaga aggttgttga 120

ggttgatgct cttgctaagg cattggctgg tcaaaaggat gaggcttact tcgcagcaaa 180

tgctgctgct caggcctcga ggaaatcctc accccgtgtg accaatgaag aagtccagaa 240

ggctgctgct gctctcaagg gctctgacca ccgccgtggg accaacgtta gtgctagatt 300

ggatgcccag cagaagaagc ttaacctccc catccttccc accactacaa tcgggttcgg 360

nnnnnnnnnn nnnnnnnnt 379

<210>	1004
<211>	351
<212>	nucleic acid
<213>	Zea mays

<400>	1004

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tccatcatcg acatggatgc cgatgtgatc acgatcgaga actcccggtc tgacgagaag 120

ctactgtccg tcttccgtga gggtgtgaag tacggagctg gcattggccc tggtgtctac 180

gacatccact ctcctaggat tccctccacc gaggagatcg cagaccgcgt cgagaagatg 240

ctcgccgtgc tcgacaccaa catcctctgg gtgaaccctg actgtggtct caagacacgc 300

aatacacgga ggtcaagccc gncctgacca acaggtctcg gcaacaagct c 351

<210>	1005
<211>	302
<212>	nucleic acid
<213>	Zea mays

<400>	1005

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ttggactggg ctgtccactc cttcagaatc accaactgcg agatccagga caccacccag 120

atccacaccc acatgtgcta ctccaacttc aacgacatca tccactcgat catcgacatg 180

gacgcggacg tgatcaccat cgagaactcg cggtccgacg agaagctgct ctccgtgttc 240

cgtgagggtg tcaagtacgg cgcgggcatc ggccccggtg tctacgacat ccactccccc 300

ag 302

<210> 1006
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 1006

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tgtggaactc aggagggtcc gtcgtgagta caaggcaaag aagatctccg aggaggaata 120

catcagtgcc atcaaggaag aaatcagcaa ggttgtcaag atccaagagg agcttgacat 180

tgatgtgctt gtgcatggag agccagaaag aaatgacatg gttgagtact tcggtgagca 240

attatctggt tttgcattca ctgccaacgg atgggtgcaa tcttatggat cacgtt 296

<210> 1007
<211> 537
<212> nucleic acid
<213> Zea mays

<400> 1007

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ccgggtcgac ccacgcgtcc ggnaggaata cgtcactgcc atcaaggagg aaattaacaa 120

ggtcgttaag cttcaagaag agcttgacat tgatgtgctt gtgcatggng agcctgagag 180

aaacgatatg gttgagtact tcggtgagca gctctncggt tttgcgttca ctgccaatgg 240

ctgggtgcag tcttatgggt caaggtgcgt caagcctccg atcatctacg gtgacgtgag 300

ccgtcccaac cccatgaccg ttttctggtc gaagacggcn canagcatga cgtctcgccc 360

aatgaaaggg gatgctgact ngcccagtca caatcctcaa ctggtncttt gtcccggaat 420

naccagccca gggtttgaga nttgctacca gaatcggctt cttgcgatca agaaagggaa 480

gtncaaggga tctttgangn tgggtggtnt ttaangttta ttncaaaatc gacnaag 537

<210> 1008
<211> 347
<212> nucleic acid

<213> Zea mays

<400> 1008

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ctggcccagt cacaatcctc aactggtcct tcgtccggaa cgaccagccg aggtttgaga 120

cttgctacca gatcgctctt gcgatcaaga aggaagtcga ggatcttgag gctggtggta 180

ttcaggttat ccaaatcgac gaggctgcac tgagagaagg gctgccgctc cgcaaggctg 240

agcatgcatt ctacttggac tgggctgtcc actccttcag aattaccaac tgcgagatnc 300

aggacaccac cagatccaca cccacatgtg ctactccaac ttcaacg 347

<210> 1009
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 1009

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ggtctgccac tgcgcaagtc agagcatgca ttctacctgg actgggctgt ccactctttc 120

agaatcacca actgcggagt ccaggacacc acccagatcc acacccatat gtgctactcc 180

aacttcaacg acatcatcca ctccatcatc gacatggacg cagatgtgat caccatcgag 240

aactcccggt ccgacgagaa gctactgtcc gtgttccgcg aggtgtgaag tacggagctg 300

gaatcggtcc agtgtctagg aatccactcg ccaagtccc 339

<210> 1010
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 1010

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accaactgcg agatccagga caccacccag atccacaccc acatgtgcta ctccaacttc 120

aacgacatca tccactcgat catcgacatg gacgcggacg tgatcaccat cgagaactcg 180

cggtccgacg agaagctgct ctccgtgttc cgtgagggtg tcaagtacgg cgcgggcatc 240

ggccccggtg tctacgacat ccactccccc aggatcccgt cggccganga gatcgccgac 300

cgcatcgaca aga 313

<210> 1011
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1011

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tgagagaaac gatatggttg agtacttcgg tgagcagctc tccggttttg cgttcactgc 120

caatggctgg gtgcagtctt atgggtcaag gtgcgtcaag cctccgatca tctacggtga 180

cgtgagccgc cccaacccca tgaccgtttt ctggtcgaag acggcacaga gcatgacgtc 240

tcgcccaatg aaggggatgc tgactggccc agtcacaatc ctcaactggt ccttcgtccg 300

gaatgaccag 310

<210> 1012
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1012

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gggtgcagtc ttatgggtca aggtgcgtca agcctccgat catctacggt gacgtgagcc 120

gccccaaccc catgaccgtt ttctggtcga agacggcgca gagcatgacg tctcgcccaa 180

tgaaggggat gctgactggc ccagtcacaa tcctcaactg gtccttcgtc cggaatgacc 240

agccgaggtt tgagacttgc taccagatcg ctcttgcgat caagaaggaa gtcgaggatc 300

tcgaggctgg tggtattca 319

<210> 1013
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1013

ctagattgga tgcccagcag aagaagctta acctccccat ccttcccacc actacaatcg 60

gttcgttccc acaaaccgtt gagctcagga gggtccgccg tgagtacaag gcaaaaaaga 120

tctctgagga ggaatacgtc actgccatca aggaggaaat caacaaggtc gttaagcttc 180

aagaagagct tgacattgat gtgcttgtgc atggcgagcc tgagagaaac gatatggttg 240

agtacttcgg tgagcagctc tccggttttg cgttcactgc caatggctgg gtgcagtctt 300

atgggtcaag gtgcg 315

<210> 1014
<211> 505
<212> nucleic acid
<213> Zea mays

<400> 1014

agggtgtnag ggggggggaag aaaggaactg tcgtaccggt ccggaattcc cgggtcgacc 60

cacgcgtccg cttgtccgtg gaacccaaac tcttgggctt gtcacgagtg ctggtttccc 120

tgctggaaag tacctctttg ctggtgttgt ggatggacgc aacatctggg ctgatgatct 180

tgctacatct ctcagcactc tccagtctct tgaggctgtt gttgggaagg acaagcttgt 240

cgtatcaact tcctgctcgc tcatgcacac cgctgtggat cttgtgaacg agactaagct 300

tgacagcgag attaagtctt ggcttgcttt tgctgcccag aaggttgttg aggttgatgc 360

tcttgctaag gcattggctg gtcaaaagga tgaggcttac ttcgcagcaa atgctgctgc 420

tcaagcctcg aggaaatcct naccccgtgt gaccaatgaa aaatccagaa ngctgctgct 480

gntcttnaag gcttttgacc accgc 505

<210> 1015
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1015

gccgtgaata caaggcaaag aagatcaccg aggacgaata catcagtgcc atcaaggaag 60

aaatcagcaa ggttgtcaag atccaagagg agcttgacat tgatgtgctt gtgcatggag 120

agccagagag aaatgacatg gttgagtact tcggtgagca attatctggt tttgcgttca 180

ctgccaacgg atgggtgcaa tcctatggat cacgctgtgt gaagccaccc attatctatg 240

gtgatgtcag ccggccgaac cccatgactg ttttctggtc caagatggca cagagcat 298

<210> 1016

<211> 493
<212> nucleic acid
<213> Zea mays

<400> 1016

gggnnnnngn aangttacgt tncgggnccg gtccaaaata aacgggtcga ngcacgcgtc 60

cgggccaact tgtcctccaa ccttgattcc tgacaaaatt ggctggcatt ctctgctgca 120

tacgcagaaa cttgaatctg tactttctgg attgaatgtg cttgttgaga cttactttgc 180

tgatgttcct gctgagtcct acaagaccct aacatctctg agcagtgtga ctgcttatgg 240

ttttgatctt gtccgtggaa cccaaactct tgggcttgtc acgagtgctg gtttccctgc 300

tggaaagtac ctctttgctg gtgttgtgga tggacgcaac atctgggctg atgatcttgc 360

tacatctctc agcactctcc agtctcttga ggctgttgtt gggaaggaca agcttgtcgt 420

atcaacttcc tgctcgctca tgcacaccgc tgtggatctt gtgaacgaga ctaagcttga 480

cagcgagatt aag 493

<210> 1017
<211> 356
<212> nucleic acid
<213> Zea mays

<400> 1017

cgccgctgcg ccgttctcct ccgctcccgt cgtccggaaa gatggcgtcc cacattgttg 60

gataccctcg catgggcccc aagagggagc tcaagtttgc acttgagtct ttctgggatg 120

ggaagagcac cgctgaggat ctggagaagg ttgctaccga cctcagggcc agtatctgga 180

agcagatggc tgatgctggg atcaagtaca tccccagcaa cactttctcg tactatgacc 240

aggtccttga caccactgcc atgctcggcg ctgtccccga acgttactca tggactggan 300

gagagattgg anttgacacc tacttctcca tggccagggc aacgcactgt tcctgc 356

<210> 1018
<211> 344
<212> nucleic acid
<213> Zea mays

<400> 1018

gcctaccatc tgttcagaca agcttgtcgt atcaacttcc tgctcgctca tgcacaccgc 60

tgtggatctt gtgaacgaga ctaagcttga cagcgagatt aagtcttggc ttgcttttgc 120

tgcccagaag gttgttgagg ttgatgctct tgctaaggca ttggctggtc aaaaggatga 180

ggcttacttc gcagcaaatg ctgcagctca ggcctcgagg aaatcctcac cccgtgtgac 240

caatgaagaa gtccagaagg ctgctgctgc tctcaagggc tctgaccacc gccgtgcgac 300

caacgttagt gctagattng atgcccagca gaagaagcct aacc 344

<210> 1019
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1019

ccgccgtgct accactgttg ctgctagatt ggatgctcag cagaaaaagc tcaaccttcc 60

tgtccttccc acaaccacaa ttggttcatt ccctcagact gtggaactca ggagggtccg 120

tcgtgagtac aaggcaaaga agatctccga ggaggaatac atcagtgcca tcaaggaaga 180

aatcagcaag gttgtcaaga tccaagagga gcttgacatt gatgtgcttg tgcatggaga 240

gccagaaaga aatgacatgg ttgagtactt cggtgagcaa ttatctggtt tt 292

<210> 1020
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1020

accagccgag gtttgagact tgctaccaga tcgctcttgc gatcaagaag gaagtcgagg 60

atctcgaggc tggtggtatt caggttatcc aaatcgacga ggctgcactg agagaagggc 120

tgccgctccg caaggctgag catgcattct acttggactg ggctgtccac tccttcagaa 180

tcaccaactg cgagatccag gacaccaccc agatccacac ccacatgtgc tactccaact 240

tcaacgacat catccactcg atcatcgaca tggacgcgga cgtgatcacc atcgagaact 300

cgcggtccga cg 312

<210> 1021
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1021

caagatccaa gaggagcttg acattgatgt gcttgtgcat ggagagccag agagaaatga 60

catggttgag tacttcggtg agcaattatc tggttttgcg ttcactgcca acggatgggt 120

gcaatcctat ggatcacgct gtgtgaagcc acccattatc tacggtgatg tcagccggcc 180

gaaccccatg actgttttct ggtccaagat ggcacagagc atgacccctc gtcccatgaa 240

gggaatgttg actggtccgg tcacaatcct caactggtca ttcgtc 286

<210> 1022
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1022

atgtgctact ccaacttcaa cgacatcatc cactccatca tcgacatgga tgccgatgtg 60

atcacgatcg agaactcccg atctgacgag aagctactgt ccgtcttccg tgagggtgtg 120

aagtacggag ctggcattgg ccctggtgtc tacgacatcc actctcctag gattccctcc 180

accgaggaga tcgcagaccg cgtcgagaag atgctcgccg tgctggacac caacatcctc 240

tgggtgaacc ctgactgtgg tctcaagaca cgcaagtaca cggaggt 287

<210> 1023
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1023

caaggntgtc aagatccaag aggagcttga cattgatgtg cttgtgcatg gagagccaga 60

gagaaatgac atggttgagt acttcggtga gnaattatct ggttttgcgt tcactgccaa 120

cggatgggtg caatcctatg gatcacgctg tgtgaagcca cccattatct atggtgatgt 180

cagccggccg aaccccatga ctgttttctg gtccaagatg gcacagagca tgacccctcg 240

tcccatgaag ggaatgttga ctggtccggt cacaatcctg aactggtcat tcgtc 295

<210> 1024
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1024

agaagatcac cgatgacgaa tacatcagtg ccatcaagga agaaatcagc aaggttgtca 60

agatccaaga ggagcttgac attgatgtgc ttgtgcatgg agagccagag agaaatgaca 120

tggttgagta cttcggtgag caattatctg gttttgcgtt cactgccaac ggatgggtgc 180

aatcctatgg atcacgctgt gtgaagccac ccattatcta tggtgatgtc agccggccga 240

accccatgac tgttttctgg tccaagatgg cacagagcat gacccctcgt cccatgaag 299

<210> 1025
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1025

tgagtacaag gcaaaaaaga tctctgagga ggaatacgtc actgccatca aggaggaaat 60

caacaaggtc gttaagcttc aagaagagct tgacattgat gtgcttgtgc atggcgagcc 120

tgagagaaac gatatggttg agtacttcgg tgagcagctc tccggttttg cgttcactgc 180

caatggctgg gtgcagtctt atgggtcaag gtgcgtcaag cctccgatca tctacggtga 240

cgtgagccgc cccaacccca tgaccgtttt ctggtcgaag aggcacagag catgacgtct 300

cgcccaatga ag 312

<210> 1026
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1026

aaagatctct gaggaggaat acgtcactgc catcaaggag gaaatcaaca aggtcgttaa 60

gcttcaagaa gagcttgaca ttgatgtgct tgtgcatggc gagcctgaga gaaacgatat 120

ggttgagtac ttcggtgagc agctctccgg ttttgcgttc actgccaatg gctgggtgca 180

gtcttatggg tcaaggtgcg tcaagcctcc gatcatctac ggtgacgtga gccgccccaa 240

ccccatgacc gttttctggt cgaagacggc acagagcatg acgtctcgcc caatgaagg 299

<210> 1027
<211> 310
<212> nucleic acid

<213> Zea mays

<400> 1027

gtgtgaccaa tgaagaagtc cagaaggctg ctgctgctct caagggctct gaccaccgcc 60

gtgggaccaa cgttagtgct agattggatg cccagcagaa gaagcttaac ctccccatcc 120

ttcccaccac tacaatcggt tcgttcccac aaaccgttga gctcaggagg gtccgccgtg 180

agtacaaggc aaaaaagatc tctgaggagg aatacgtcac tgccatcaag gaggaaatca 240

acaaggtcgt taagcttcaa gaagagcttg acattgatgt gcttgtgcat ggcgagcctg 300

agagaaacgg 310

<210> 1028
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1028

gtctcgccca atgaagggga tgctgactgg cccagtcaca atcctcaact ggtccttcgt 60

ccggaatgac cagccgaggt ttgagacttg ctaccagatc gctcttgcga tcaagaagga 120

agtcgaggat cttgaggctg gtggtattca ggttatccaa atcgacgagg ctgcactgag 180

agaagggctg ccgctccgca aggctgagca tgcattctac ttggactggg ctgtccactc 240

cttcagaatt accaactgcg agatccagga caccacccag atccacaccc acatgtgcta 300

ctcca 305

<210> 1029
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 1029

cgctgaggat ctggagaagg ttgctaccga cctcagggcc agtatctgga agcagatggc 60

tgatgctggg atcaagtaca tccccagcaa caccttctcg tactatgacc agntccttga 120

caccactgcc atgctcggcg ctgtccccga acgctactca tggactggag gagagattgg 180

gtttgacacc tacttctcca tggccagggg caacgccact gtccctgcta tggagannac 240

caagtggttt gacaccaact accactttat tgtccctgaa ttgggcccaa acaccaagtt 300

ctcctatgct tctcacaagg ctgttaacga 330

<210> 1030
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1030

gcattctacc tggactgggc tgtccactct ttcagaatca ccaactgcgg agtccaggac 60

accacccaga tccacaccca tatgtgctac tccaacttca acgacatcat ccactccatc 120

atcgacatgg acgcagatgt gatcaccatc gagaactccc ggtccgacga gaagctactg 180

tccgtgttcc gcgagggtgt gaagtacgga gctggaatcg gtccaggtgt ctacgacatc 240

cactcgccca ggatcccctc caccgagga 269

<210> 1031
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1031

ctcgcccaat gaaggggatg ctgactggcc cagtcacaat cctcaactgg tccttcgtcc 60

ggaatgacca gccgaggttt gagacttgct accagatcgt cttgcgatca agaaggaagt 120

cgaggatctc gaggctggtg gtattcaggt tatccaaatc gacgaggctg cactgagaga 180

agggctgccg ctccgcaagg ctgagcatgc attctacttg gactgggctg tccactcctt 240

cagaatcacc aactgcgaga tccaggacac cacccagatc cacacccaca tgtgctactc 300

caacttcaac g 311

<210> 1032
<211> 382
<212> nucleic acid
<213> Zea mays

<400> 1032

gggacaccac ccagatccac acccacatgt gctactccaa ctttcaacga catcatccac 60

tcgatcatcg acatggacgc ggacgtgatc accattgaga actcgcggtc cgacgagaag 120

ctgctctccg tgntccgcga gggcgtcaag tacggcgcgg gcatcggcnc cggtgtctac 180

gacatccact cccccaggat cncgtcggct gangagatcg ccgaccgcat cgacaagatg 240

ctggcggtgc tggacancaa catcctctgg gtgaaccccg actgcngcct caagacccgc 300

aagtacacgg agtcaagccc gcntgancaa catggtctcc gccgtaagct catccgnacc 360

agctcgccag cgcaatgana ac 382

<210> 1033
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1033

aggatcttga ggctggtggt attcaggtta tccaaatcga cgaggctgca ctgagagaag 60

ggctgccgct ccgcaaggct gagcatgcat tctacttgga ctgggctgtc cactccttca 120

gaattaccaa ctgcgagatc caggacacca cccagatcca gacccacatg tgctactcca 180

acttcaacga catcatccac tcgatcatcg acatggacgc ggacgtgatc accattgaga 240

actcgcggtc cgacgagaag ctgctctccg tgttccgcga gggcgtcaag ta 292

<210> 1034
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 1034

cttgacagcg agattaagtc ttggcttgct tttgctgccc agaaggttgt tgaggttgat 60

gctcttgcta aggcattggc tggtcaaaag gatgaggctt acttcgcagc aaatgctgca 120

gctcaggcct cgaggaaatc ctcaccccgt gtgaccaatg aagaagtcca gaaggctgct 180

gctgctctca agggctctga ccaccgccgt gcgaccaacg ttagtgctag attggatgcc 240

cagcagaaga agcttaacct ccccatcctt cccaccacta caatcggttc gttcccacaa 300

accgttgagc tcaggagggt 320

<210> 1035
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1035

acttcggtga gcagctctcc ggttttgcgt tcactgccaa tggctgggtg cagtcttatg 60

ggtcaaggtg cgtcaagcct ccgatcatct acggtgacgt gagccgcccc aaccccatga 120

ccgttttctg gtcgaagacg gcacagagca tgacgtctcg cccaatgaag gggatgctga 180

ctggcccagt cacaatcctc aactggtcct tcgtccggaa tgaccagccg aggtttgaga 240

cttgctacca gatcgctctt gcgatcaaga aggaagtcga ggatcttgag gctggtggta 300

ttcag 305

<210> 1036
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1036

caagaggagc ttgacattga tgtgcttgtg catggagagc caganagaaa tgacatggtt 60

gagtacttcg gtgagcaatt atctggtttt gcgttcactg ccaacggatg ggtgcaatcc 120

tatggatcac gctgtgtgaa gccacccatt atctatggtg atgtcagccg gccgaacccc 180

atgactgttt tctggtccaa gatggcacag agcatgaccc ctcgtcccat gaagggaatg 240

ttgactggtc cggtcacaat cctgaactgg tcattcgt 278

<210> 1037
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1037

ctctgaggag gaatacgtca ctgccatcaa ggaggaaatc aacaaggtcg ttaagcttca 60

agaagagctt gacattgatg tgcttgtgca tggcgagcct gagagaaacg atatggttga 120

gtacttcggt gagcagctct ccggttttgc gttcactgcc aatggctggg tgcagtctta 180

tgggtcaagg tgcgtcaagc ctccgatcat ctacggtgac gtgagccgcc ccaaccccat 240

gaccgttttc tggtcgaaga cggcacagag catgacgtct cgcccaatga aggggatg 298

<210> 1038
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1038

ctctgaggag gaatacgtca ctgccatcaa ggaggaaatc aacaaggtcg ttaagcttca 60

agaagagctt gacattgatg tgcttgtgca tggcgagcct gagagaaacg atatggttga 120

gtacttcggt gagcagctct ccggttttgc gttcactgcc aatggctggg tgcagtctta 180

tgggtcaagg tgcgtcaagc ctccgatcat ctacggtgac gtgagccgcc ccaaccccat 240

gaccgttttc tggtcgaaga cggcacagag catgacgtct cgcccaatga aggggatg 298

<210> 1039
<211> 447
<212> nucleic acid
<213> Zea mays

<400> 1039

ggcgctcggt gttgataccg tgccagtact tgttggacca gtctcgtacc tgttgcngnn 60

aaagcctgcc aagggtgtgg agaagggatt ccctcttctt tcccttctta gcagcatcct 120

cccagtctac aaggaggtca ttgctgagtt gaaggcagct ggggcttcat ggattcagtt 180

tgatgagccc actcttgtcc tcgaccttga ttctgacaaa ttggctgcat tctctgctgc 240

atatgcagaa cttgaatctg tactttctgg attgaatgtg cttgttgaga cttactttgc 300

tgatgttcct gctgagtcct acaagaccct aacatccctg aacagtgtga ctgcttatgg 360

gtttgatcnt gtccggggac ccnaaactnt tgggcttggc accaaggctg gnttccttnt 420

tggaaanaac cctntttgct gggggtg 447

<210> 1040
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1040

ctccaagaag agcttgacat tgatgtgctt gtgcatggcg agcctgagag aaacgatatg 60

gttgagtact tcggtgagca gctcctccgg ttttgcgttc actgccaatg gctgggtgca 120

gtcttatggg tcaaggtgcg tcaagcctcc gatcatctac ggtgacgtga gccgccccaa 180

ccccatgacc gttttctggt cgaagacggc gcagagcatg acgtctcgcc caatgaaggg 240

gatgctgact ggcccagtca caatcctcaa ctggtccttc gtccggaatg accagccgag 300

g 301

<210> 1041
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1041

caaggtcgtt aagctccaag aagagcttga cattgatgtg cttgtgcatg gcgagcctga 60

gagaaacgat atggttgagt acttcggtga gcagctctcc ggttttgcgt tcactgccaa 120

tggctgggtg cagtcttatg ggtcaaggtg cgtcaagcct ccgatcatct acggtgacgt 180

gagccgcccc aaccccatga ccgttttctg gtcgaagagg cgcagagcat gacgtctcgc 240

ccaatgaagg ggatgctgac tggcccagtc acaatcctca actggtcctt cgtccgg 297

<210> 1042
<211> 548
<212> nucleic acid
<213> Zea mays

<400> 1042

gnnnaggtgn tnannggggn nggaaggaac nttttaccgg tccggaattc ccgggtcgac 60

ccacgcgtcc gcccacgcgt ccgctcgatc atcgacatgg acgcggacgt gatcaccatt 120

gagaactcgc ggnccgacga gaagctgctc tccgtgttcc gcgagggcgt caagtacggc 180

gcgggcatcg gccccggtgt ctacgacatc cactccccca ggatcccgtc ggctgaggag 240

atcgccgacc gcatcgacaa gatgctggcg gtgctggaca ccaacatcct ctgggtgaac 300

cccgactgcg gcctcaagac ccgcaagtac acggaggtca agcccgcctg accaacatgg 360

tctccgccgc taagctcatc cgcacccagc ttgncagcgc caagtgagca ccnttttttt 420

tgccttttc ggtttcgaag aaggcgtcgt cgatgccaat ttggtttcca ataaaaaggc 480

tttgcccgcc gtctgtgnac tccgctgngg taaggtaaga agtttcttaa aaaaaaaaaa 540

angggggc 548

<210> 1043
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1043

gacggcgcag agcatgacgt ctcgcccaat gaaggggatg ctgactggcc cagtcacaat 60

cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gagacttgct accagatcgc 120

tcttgcgatc aagaaggaag tcgaggatct cgaggctggt ggtattcagg ttatccaaat 180

cgacgaggct gcactgagag aagggctgcc gctccgcaag gctgagcatg cattctactt 240

ggactgggct gtccactcct tcagaatcac caactgcgag atccaggaca ccacccagat 300

cca 303

<210> 1044
<211> 602
<212> nucleic acid
<213> Zea mays

<400> 1044

gcggacgtga tcaccattga gaactcgcgg tccgacgaga agctgctctc cgtgttccgc 60

gagggcgtca agtacggcgc gggcatcggc cccggtgtct acgacatcca ctcccccagg 120

atcccgtcgg ctgaggagat cgccgaccgc atcgacaaga tgctggcggt gctggacacc 180

aacatcctct gggtgaaccc cgactgcggc ctcaagaccc gcaagtacac ggaggtcaag 240

cccgccctga ccaacatggt ctccgccgct aagctcatcc gcacccagct cgccagcgcc 300

aagtgagcac cttttttttg ccttttttcgt ttccgaggag ggcgtcgtcg atgccaattt 360

gtttccaata aacagggctg tgcccgccgt tctgttgtac tccgtctgtg gttaggttag 420

tagttttctt gatctcgccc ccacgcggta cctgttttac tactctctgt ttggtggttt 480

ctgaggcaag ttgcccgtgt acttgtatcg taaaaaccga gtgggacatc tgcatcgttt 540

catctgncac cactnccccg aggtgtgctg gttcacggct caaagaaaga tgtcntatcg 600

gc 602

<210> 1045
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1045

ggttgtcaag atccaagagg agcttgacat tgatgtgctt gtgcatggag agccagagag 60

aaatgacatg gttgagtact tcggtgagca attatctggt tttgcgttca ctgccaacgg 120

atgggtgcaa tcctatggat cacgctgtgt gaagccaccc attatctatg gtgatgtcag 180

ccggccgaac cccatgactg ttttctggtc caagatggca cagagcatga cccctcgtcc 240

catgaaggga atgttgactg gtccggtcac aat 273

<210> 1046
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 1046

atcatcgccg ctgcgccgtc tcctccgctc ccgtcgtccg gaaagatggc gtcccacatt 60

gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgcacttga gtctttctgg 120

gatgggaaga gcaccgctga ggatctggag aaggttgcta ccgacctcag ggccagtatc 180

tggaagcaga tggctgatgc tgggatcaag tacatcccca gcaacacttt ctcgtactat 240

gaccaggtcc ttgacaccac tgccatgctc ggcgctgtcc ccgaacgtta ctcatgnact 300

ggaggagaga ttggatttga cacctact 328

<210> 1047
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1047

aaaaaagatc tctgaggagg aatacgtcac tgccatcaag gaggaaatca acaaggtcgt 60

taagcttcaa gaagagcttg acattgatgt gcttgtgcat ggcgagcctg agagaaacga 120

tatggttgag tacttcggtg agcagctctc cggtttggcg ttcactgcca atggctgggt 180

gcagtcttat gggtcaaggt gcgtcaagcc tccgatcatc tacggtgacg tgagccgccc 240

caaccccatg accgttttct ggtcgaagac ggcacagagc atgacgtctc gcccaat 297

<210> 1048
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1048

ctctttcaga atcaccaact gcggagtcca ggacaccacc cagatccaca cccatatgtg 60

ctactccaac ttcaacgaca tcatccactc catcatcgac atggacgcag atgtgatcac 120

catcgagaac tcccggtccg acgagaagct actgtccgtg ttccgcgagg gtgtgaagta 180

cggagctgga atcggtccag gtgtctacga catccactcg cccaggatcc cctccaccga 240

ggagatcgcg gaccgcgtca acaa 264

<210> 1049
<211> 471
<212> nucleic acid
<213> Zea mays

<400> 1049

gggnnnnacg ttantcngcg ngnncggtca naggacncac nggccgaggc ncgcgtccac 60

accnatcatc gccgctgcgc cgtctcctcc gctcccgtcg tccggaaaga tggcgtccca 120

cattgttgga taccctcgca tgggccccaa gagggagctc aagtttgcac ttgagtcttt 180

ctgggatggg aagagcaccg ctgaggatct ggagaaggtt gctaccgacc tcagggccag 240

tatctggaag cagatggctg atgctgggat caagtacatc cccagcaaca ccttctcgta 300

ctatgaccag gtccttgaca ccactgccat gctcggcgct gtccccgaac gctactcatg 360

gactggagga gagattgggt ttgacaccta acttctccat ggccaagggc aacgccactg 420

tccctgctat gggagatacc aanttggttt tggacacaaa ctaccaactt t 471

<210> 1050
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1050

cgctcccgtc gtccggaaag atggcgtccc acattgttgg ataccctcgc atgggcccca 60

agagggagct caagtttgca cttgagtctt tctgggatgg gaagagcacc gctgaggatc 120

tggagaaggt tgctaccgac ctcagggcca gtatctggaa gcagatggct gatgctggga 180

tcaagtacat ccccagcaac actttctcgt actatgacca ggtccttgac accactgcca 240

tgctcggcgc tgtccccgaa cgttactcat ggactggagg agagattgga t 291

<210> 1051

<211> 349
<212> nucleic acid
<213> Zea mays

<400> 1051

atccactcca tcatcgacat ggatgccgat gtgatcacga tcgagaactc ccgatctgac 60

gagaagctna ctgtccgtct tccgtgaggg tgtgaagtac ggagctgggc attggccctg 120

gtgtctacga catccactct cctaggattc acctccaccg aggagatcgc agaccgcgtc 180

gagaagatgc tcgccgtgct ggacaccaac atcctctggg tgaaccctga ctgtggtctc 240

aanacacgca agtacacgga ggtcaagccc gccctgacca acatggtctc ggccancaag 300

ctcatccgca cccagcttgc caacgcgaaa tgagtcgttt gatagctcc 349

<210> 1052
<211> 333
<212> nucleic acid
<213> Zea mays

<400> 1052

gttctagcat ctggaagcaa atgtcagaag ctgggatcaa gtacattccc agcaacacct 60

tctcgtacta tgaccaggtc cttgatacca cggccatgct tggtgctgtc ccagagcgct 120

actcttggac tggaggcgag attggcttga gcacctattt ctcaatggcc aggggaaatg 180

ccactgtccc tgctatggag atgaccaagt ggtttgatac aaactaccac tttattgtcc 240

ctgaattggc ccaagcacca agttcacata cgcttctcac aangctgttt ctgagtacaa 300

ggaggcaaaa gcgctcggta ttgatatgtc cca 333

<210> 1053
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1053

ctggaaagta cctctttgct ggtgttgtgg atggacgcaa catctgggct gatgatcttg 60

ctacatctct cagcactctc cagtctcttg aggctgttgt tgggaaggac aagcttgtcg 120

tatcaacttc ctgctcgctc atgcacaccg ctgtggatct tgtgaacgag actaagcttg 180

acagcgagat taagtcttgg cttgcttttg ctgcccagaa ggttgttgag gttgatgctc 240

ttgctaaggc attggctggt caaaaggatg aggcttactt cgcagcaaat gctgcagct 299

<210> 1054
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1054

gctaccagat cgctcttgcg atcaagaagg aagtcgagga tcttgaggct ggtggtattc 60

aggttatcca aatcgacgag gctgcactga gagaagggct gccgctccgc aaggctgagc 120

atgcattcta cttggactgg gctgtccact ccttcagaat taccaactgc gagatccagg 180

acaccaccca gatccacacc cacatgtgct actccaactt caacgacatc atccactcga 240

tcatcgacat ggacgcggac gtgatcacca ttgagaatcg g 281

<210> 1055
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1055

cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc acattgttgg 60

ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca gtatctggaa 180

gcagatggct gatgctggga tcaagtacat ccccagcaac actttctcgt actatgacca 240

ggtccttgac accactgcca tgctcggcgc tgtccccgaa cgttactcat ggactggagg 300

agaga 305

<210> 1056
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1056

ggctggtcaa aaggatgagg cttacttcgc agcaaatgct gctgctcagg cctcgaggaa 60

atcctcaccc cgtgtgacca atgaagaagt ccagaaggct gctgctgctc tcaagggctc 120

tgaccaccgc cgtgggacca acgttagtgc tagattggat gcccagcaga agaagcttaa 180

cctccccatc cttcccacca ctacaatcgg ttcgttccca caaaccgttg agctcaggag 240

ggtccgccgt gagtacaagg caaaaaagat ctctgaggag gaatacgtca ct 292

<210> 1057
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1057

atcaagaagg aagtcgagga tcttgaggct ggtggtattc aggttatcca aatcgacgag 60

gctgcactga gagaagggct gccgctccgc aaggctgagc atgcattcta cttggactgg 120

gctgtccact ccttcagaat taccaactgc gagatccagg acaccaccca gatccacacc 180

cacatgtgct actccaactt caacgacatc atccactcga tcatcgacat ggacgcggac 240

gtgatcacca ttgagaactc gcggtccgac gagaagctg 279

<210> 1058
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1058

atcgctcttg cgatcaagaa ggaagtcgag gatctcgagg ctggtggtat tcaggttatc 60

caaatcgacg aggctgcact gagagaaggg ctgccgctcc gcaaggctga gcatgcattc 120

tacttggact gggctgtcca ctccttcaga atcaccaact gcgagatcca ggacaccacc 180

cagatccaca cccacatgtg ctactccaac ttcaacgaca tcatccactc gatcatcgac 240

atggacgcgg acgtgatcac catcgagaac tcgcggtccg acgaga 286

<210> 1059
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1059

caagatccaa gaggagcttg acattgatgt gcttgtgcat ggagagccag agagaaatga 60

catggttgag tacttcggtg agcaattatc tggttttgcg ttcactgcca acggatgggt 120

gcaatcctat ggatcacgct gtgtgaagcc acccattatc tatggtgatg tcagccggnc 180

gaaccccatg actgttttct ggtccaagat ggcacagagc atgacccctc gtcccatgaa 240

gggaatgttg actggtccgg tcacaatcc 269

<210> 1060
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 1060

gcaacatctg gggctgatga tcttgctaca tctctcagca ctctccagtc tcttgaggct 60

gttgttggga aggacaagct tgtcgtatca acttcctgct cgctcatgca caccgctgtg 120

gatcttgtga acgagactaa gcttgacagc gagattaagt cttggcttgc ttttgctgcc 180

cagaaggttg ttgaggttga tgctcttgct aaggcattgg ctggtcaaaa ggatgaggct 240

tacttcgcag caaatgctgc agctcaggcc tcgaggaaat cctcaccccg tgtgaccaat 300

gaagaagtcc agaaggctgc tgc 323

<210> 1061
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1061

angatcttga ggctgctggt attcaggtga tccagattga tgaggcagct ctaagggagg 60

gtctgccact gcgcaagtta gagcatgcat tctacctgga ctgggctgtc cactctttca 120

gaatcaccaa ctgcggagtc caggacacca cccagatcca cacccatatg tgctactcca 180

acttcaanga catcatccac tccatcatcg acatggacgc agatgtgatc accatcgaga 240

actcccggtc cgacgagaag ctactgtccg tgttccgcga ggtgtga 287

<210> 1062
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1062

cctcgcatgg gccccaagag ggagctcaag tttgcacttg agtctttctg ggatgggaag 60

agcaccgctg aggatntgga gaaggttgct accgacctca gggccagtat ctggaagcag 120

atggctgatg ctgggatcaa gtacatcccc agcaacacct tctcgtacta tgaccaggtc 180

cttgacacca ctgccatgct cggcgctgtc cccgaacgct actcatggac tggaggagag 240

attgggtttg acacctactt ctccatggcc aggggcaacg ccactgtccc tgcta 295

<210> 1063
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 1063

gtcagagcat gcattctacc tggactgggc tgtccactct ttcaggatca ccaactgcgg 60

agtccaggac accacccaga tccacaccca catgtgctac tccaacttca acgacatcat 120

ccactccatc atcgacatgg atgccgatgt gatcacgatc gagaactccc gatctgacga 180

gaagctactg tccgtcttcc gtgagggtgt gaagtacgga gctggcattg gccctggtgt 240

ctacgacatc catctcctag gattccctcc accgaggaga tcgcagaccg cgtcgagaag 300

atgc 304

<210> 1064
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1064

ctgcgagatc caggacacca cccagatcca cacccacatg tgctactcca acttcaacga 60

catcatccac tcgatcatcg acatggacgc ggacgtgatc accatcgaga actcgcggtc 120

cgacgagaag ctgctctccg tgttccgggg gtgtcaagta cggcgcgggc atcggccccg 180

gtgtctacga catccactcc cccaggatcc cgtcggccga ggagatcgcc gaccgcatcg 240

acaagatgct ggccgtgctg gacaccaaca tcctctgggt gaaccccgac tgc 293

<210> 1065
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1065

tcttggcttg cttttgctgc ccagaaggtt gttgaggttg atgctcttgc taaggcattg 60

gctggtcaaa aggatgaggc ttacttcgca gcaaatgctg ctgctcaggc ctcgaggaaa 120

tcctcacccc gtgtgaccaa tgaagaagtc cagaaggctg ctgctgctct caagggctct 180

gaccaccgcc gtgggaccaa cgttagtgct agattggatg cccagcagaa gaagcttaac 240

ctccccatcc ttcccaccac tacaatcggt tcgttcccac aaacc 285

<210> 1066
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1066

gggctgtcca ctccttcaga attaccaact gcgagatcca ggacaccacc cagatccaca 60

cccacatgtg ctactccaac ttcaacgaca tcatccactc gatcatcgac atggacgcgg 120

acgtgatcac cattgagaac tcgcggtccg acgagaagct gctctccgtg ttccgcgagg 180

gcgtcaagta tggcgcgggc atcggccccg gtgtctacga catccactcc cccaggatcc 240

cgtcggctga ggagatcgcc gaccgcatcg acaagatntg gcggt 285

<210> 1067
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1067

tctggaagca gatggctgat gctgggatca agtacatccc cagcaacact ttctcgtact 60

atgaccaggt ccttgacacc actgccatgc tcggcgctgt ccccgaacgt tactcatgga 120

ctggaggaga gattggattt gacacctact tctccatggc caggggcaac gccactgttc 180

ctgctatgga gatgaccaag tggtttgaca ccaactacca ctttattgtc cctgaattgg 240

gcccaaacac caagttctcc tatgcttctc acaaggc 277

<210> 1068
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1068

cccagatcca cacccacatg ngcncgtcca acttcaacga catcatccac tcgatcatcg 60

acanggacgc ggacgtgatc accatcgaga actcgcggtc cgacgagaag ctgctctccg 120

tgttccgtga gggtgtcaag tacggcgcgg gcatcggccc cggtgtctac gacatccact 180

cccccaggat cccgtcggcc gaggagatcg ccgaccgcat cgacaagatg ctggccgtgc 240

tggacaccaa catcctctgg gtgaaccccg actgcggcct 280

<210> 1069
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1069

cattgatntg cttgtgcatg gcgagcctga nagaaacgat atggttgagt acttcggtga 60

gcagctctcc ggttttgcgt tcactgccaa tggctgggtg cagtcttatg ggtcaaggtg 120

cgtcaagcct ccgatcatct acggtgacgt gagccgcccc aaccccatga ccgttttctg 180

gtcgaagagg cgcagagcat gacgtctcgc ccaatgaagg ggatgctgac tggnccagtc 240

acaatcctca actggtcctt cgtccggaat gaccagccga ggtttgaaac tgcnaac 297

<210> 1070
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1070

cgtcactgcc atcaaggagg aaatcaacaa ggtcgttaag cttcaagaag agcttgacat 60

tgatgtgctt gtgcatggcg agcctgagag aaacgatatg gttgagtact tcggtgagca 120

gctctccggt tttgcgttca ctgccaatgg ctgggtgcag tcttatgggt caaggtgcgt 180

caagcctccg atcatctacg gtgacgtgag ccgccccaac cccatgaccg ttttctggtc 240

gaagaggcac agagcatgac gtctcgccca atgaagggga tgctgactg 289

<210> 1071
<211> 486
<212> nucleic acid
<213> Zea mays

<400> 1071

gctcagcaga aaaagctcaa ccttccngtc cnncccacaa ccacaattgg ttcattcccg 60

gaaacggtgg aactcaggng ggttcgncgt gaatacaagg caaagaagat caccgaggac 120

gaatacatca gtgccatcaa ggaagaaatc agcaaggtng tcaagatcca ataggagctn 180

gacattgatg tgcttgtgca tggagagcca gagagaaatg acatggttga gtacttcggn 240

gagcaattat ctggttttag cgttcactgc caacggatgg gtgcaatnct attgatcacg 300

ctgtggtgaa gccacccatt atctatgnga tgtcaaagcg gcccnacccc atnctgntnt 360

ctggtcccaa gatngancat acatgacccc ttntnccatg naagggaatg gttgactggg 420

tcnggtcaca attcttaaac ttggtcattn gntaaaggaa cgacnancct taggtttnaa 480

anannc 486

<210> 1072
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1072

aaccccatga ccgttttctg gtcgaagagg tcacagagca tgacgtctcg cccaatgaag 60

gggatgctga ctggcccagt cacaatcctc aactggtcct tcgtccggaa tgaccagccg 120

aggtttgaga cttgctacca gntcgctctt gcgatcaaga aggaagtcga ggatcttgag 180

gctggtggta ttcaggttat ccaaatcgac gaggctgcac tgagagaagg gctgccgctc 240

cgcaangctg agcatgcatt ctacttggac tgggctgtcc actcct 286

<210> 1073
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1073

gaagagcttg acattgatgt gcttgtgcat ggcgagcctg agagaaacga tatggttgag 60

tacttcggtg agcagctctc cggttttgcg ttcactgcca atggctgggt gcagtcttat 120

gggtcaaggt gcgtcaagcc tccgatcatc tacggtgacg tgagccgccc caaccccatg 180

accgttttct ggtcgaagac ggcacagagc atgacgtctc gcccaatgaa ggggatgctg 240

actggcccag tcacaatcct caactggtct tcgtccggaa tgaccagccg aggtttgaga 300

ttgct 305

<210> 1074
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1074

caatcggttc gttcccacaa accgttgagc tcaggagggt ccgccgngag tacaaggcaa 60

aaaagatctc tgaggaggaa tacgtcactg ccatcaagga ggaaatcaac aaggtcgtta 120

agcttcaaga agagcttgac attgatgtgc ttgtgcatgg cgagcctgag agaaacgata 180

tggttgagta cttcggtgag cagctctccg gttttgcgtt cactgccaat ggctgggtgc 240

agtcttatgg gtcaaggngc gncaagcctc cgatcatnga gggtgaccnc c 291

<210> 1075
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1075

tgcacttgag nctttctggg atgggaagag caccgctgag gatctggaga aggttgctac 60

cgacctcagg gccagtatct ggaagcagat ggctgangct gggatcaagt acatccccag 120

caacactttc tcgtactatg accaggtcct tgacaccact gccatgctcg gcgctgtccc 180

cgaacgttac tcatggactg gaggagagat tggatttgac acctacttct ccnnggccag 240

gggcaacgcc actgttcctg ctatggagat gaccangtgg tttgacacca ataccac 297

<210> 1076
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1076

acctatcatc gccgctgcgc cgtctcctcc gctcccgtcg tccggaaaga tggcgtccca 60

cattgttgga taccctcgca tgggccccaa gagggagctc aagtttgcac ttgagtcttt 120

ctgggatggg aagagcaccg ctgaggatct ggagaaggtt gctaccgacc tcagggccag 180

tatctggaag cagatggctg atgctgggat caagtacatc cccagcaaca ccttctcgta 240

ctatgaccag gtccttgaca ccactgccat gctcggcgct gtccccgaac gctactcatg 300

gactggagga ga 312

<210> 1077
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1077

gttgggaagg acaagcttgt cgtatcaact tcctgctcgc tcatgcacac cgctgtggat 60

cttgtgaacg agactaagct tgacagcgag attaagtctt ggcttgcttt tgctgcccag 120

aaggttgttg agggtgangc tcttgctaag gcantggctg gtcaaaagga tgaggcttac 180

ttcgcagcaa atgctgctgc tcaggcctcg aggaaatcct caccccgtgt gaccaatgaa 240

gaagtccaga aggctgctgc tgctctcaag ggctctgacc accgccgtgg gaccaacgtt 300

agtgcta 307

<210> 1078
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1078

ggcgtcccac attgttggat accctcgcat gggccccaag anggagctca agtttgcact 60

tgagtctttc tgggatggga agaacaccgc tgagnatctg gagaaggttg ctaccgacct 120

cagggccagt atctggaagc agatggctga tgctgggatc aagtacatcc ccagcaacac 180

tttctcgtac tatgaccagg tccttgacac cactgccatg ctcagcgctg tccccgaacg 240

ttactcatgg actggaggag agattggatt tgac 274

<210> 1079
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1079

gagagattgg atttgacacc tacttctcca tggccagggg caacgccact gttcctgcta 60

tggagatgac caagtggttt gacaccaact accactttat tgtccctgaa ttgggcccaa 120

acaccaagtt ctcctatgct tctcacaagg ctgttaacga atataaggag gctaaggcgc 180

tcggtgttga taccgtgcca gtacttgttg gaccagtctc gtacctgttg ctctcaaagc 240

ctgccaaggg tgtggagaag ggattccctc ttctttccct tcttagcag 289

<210> 1080
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1080

ctaagcttga cagcgagatt aagtcttggc ttgcttttgc tgcccagaag gttgttgagg 60

ttgatgctct tgctaaggca ttggctggtc aaaaggatga ggcttacttc gcagcaaatg 120

ctgcagctca ggcctcgagg aaatcctcac cccgtgtgac caatgaagaa gtccagaagg 180

ctgctgctgc tctcaagggc tctgaccacc gccgtgcgac caacgttagt gctagattgg 240

atgcccagca gaagaagctt aacctcccca tccttcccac cactac 286

<210> 1081
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 1081

cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc acattgttgg 60

ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca gtatctggaa 180

gcagatggct gatgctggga tcaagtacat ccccagcaac accttctcgt actatgacca 240

ggtccttgac accactgcca ngctcggcgc tgtccccgaa cgntactcat ggactggnng 300

gagaaattgg gtttcacacc tat 323

<210> 1082
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1082

cacaaaccgt tgcagctcag gagggtccgc cgtgagtaca aggcaaaaaa gatctctgag 60

gaggaatacg tcactgccat caaggaggaa atcaacaagg tcgttaagct ccaagaagag 120

cttgacattg atgtgcttgt gcatggcgag cctgagagaa acgatatggt tgagtacttc 180

ggtgagcagc tctccggttt tgcgttcact gccaatggct gggtgcagtc ttatgggtca 240

aggtgcgtca agcctccgat catctacggt gactgagccg ccccaacccc atgaccgttt 300

tctgg 305

<210> 1083
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1083

gtacaaggca aaaaatatct ctgaggagga atacgtcact gccatcaagg aggaaatcaa 60

caaggtcgtt aagcnccaag aagagcttga cattgangtg cttgtgcatg gcgagcctga 120

ganaaacgat atggttgagt acttcggtga gcagctctcc ggttttgcgt tcactgccaa 180

tggctgggtg cagtcttatg ggtcaaggtg cgtcaagcct ccgatcatct acggtgacgt 240

gagccgcccc aaccccatga ccgttttctg gtcgnagacg g 281

<210> 1084
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1084

gaccagccga ggtttgagac ttgctaccag atcgctcttg cgatcaagaa ggaagtcgag 60

gatctcgagg ctggtggtat tcaggttatc caaatcgacg aggctgcact gagagaaggg 120

ctgccgctcc gcaaggctga gcatgcattc tacttggacn gggctgtcca cnccttcaga 180

atcaccaacn gcgagatcca ggacaccacc cagatccaca cccacatgtg ctacnccaac 240

ttcaacgaca tcatccactc gatcatcgac atggacgcgg ngtgatcacc acgagannen 300

ggtcgcgaga actg 314

<210> 1085
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1085

gtgtgaccaa tgaagaagtc cagaaggctg ctgctgctct caagggctct gaccaccgcc 60

gtgggaccaa cgttagtgct agattggatg cccagcagaa gaagcttaac ctccccatcc 120

ttcccaccac tacaatcggt tcgttcccac aaaccgttga gctcaggagg gtccgccgtg 180

agtacaaggc aaaaaagatc tctgaggagg aatacgtcac tgccatcaag gaggaaatca 240

acaaggtcgt taagcttcaa gaagagcttg acattgatgt g 281

<210> 1086
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1086

ctatcatcgc cgctgcgccg tctcctccgc tcccgtcgtc cggaaagatg gcgtcccaca 60

ttgttggata ccctcgcatg ggccccaaga gggagctcaa gtttgcactt gagtctttct 120

gggatgggaa gagcaccgct gaggatctgg agaaggttgc taccgacctc agggccagta 180

tctggaagca gatggctgat gctgggatca agtacatccc cagcaacacc ttctcgtact 240

atgaccaggt ccttgacacc actgccatgc tcggcgctgt ccccgaacgc tactcatgga 300

ctggag 306

<210> 1087
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1087

tgctggtatt caggtgatcc agatcgatga ggcagctcta agggagggtc tgccactacg 60

caagtcagag catgcattct acctggactg ggctgtccac tctttcagga tcaccaactg 120

cggagtccag gacaccaccc agatccacac ccacatgtgc tactccaact tcaacgacat 180

catccactcc atcatcgaca tggatgccga tgtgatcacg atcgagaact cccggtctga 240

cgagaagcta ctgtccgtct tccgt 265

<210> 1088
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1088

gcttaacctc cccatccttc ccaccactac aatcggttcg ttcccacaaa ccgttgagct 60

caggagggtc cgccgtgagt acaaggcaaa aaagatctct gaggaggaat acgtcactgc 120

catcaaggag gaaatcaaca aggtcgttaa gcttcaagaa gagcttgaca ttgatgtgct 180

tgtgcatggc gagcctgaga gaaacgatat ggttgagtac ttcggtgagc agctctccgg 240

ttttgcgttc actgccaatg gctggg 266

<210> 1089
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1089

agcagctctc cggttttgcg ttcactgcca atggctgggt gcagtcttat gggtcaaggt 60

gcgtcaagcc tccgatcatc tacggtgacg tgagccgccc caaccccatg accgttttct 120

ggtcgaagac ggcacagagc atgacgtctc gcccaatgaa ggggatgctg actggcccag 180

tcacaatcct caactggtcc ttcgtccgga atgaccagcc gaggtttgag acttgctacc 240

agatcgctct tgcgatcaag aaggaagtcg aggatttgag gctggtggta ttcaggttat 300

ccaaatcgac g 311

<210> 1090
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1090

tatcatcgcc gctgcgccgt ctcctccgct cccgtcgtcc ggaaagatgg cgtcccacat 60

tgttggatac cctcgcatgg gccccaagag ggagctcaag tttgcacttg agtctttctg 120

ggatgggaag agcaccgctg aggatctgga gaaggttgct accgacctca gggccagtat 180

ctggaagcag atggctgatg ctgggatcaa gtacatcccc agcaacacct tctcgtacta 240

tgaccaggtc cttgacacca ctgccatgct cggcgctgtc cccgaacgct antcatggac 300

tggaggaga 309

<210> 1091

<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1091

cgatcatcga catggacgcg gacgtgatca ccatcgagaa ctcgcggtcc gacgagaagc 60

tgctctccgt gttccgtgag ggtgtcaagt acggcgcggg catcggcccc ggtgtctacg 120

acatccactc ccccaggatc ccgtcggccg aggagatcgc cgaccgcatc gacaagatgc 180

tggccgtgct ggacaccaac atcctctggg tgaaccccga ctgcggcctc aagacccgca 240

agtacacgga ggtcaagccc gccctgacca acatggtctc cgctgctaag t 291

<210> 1092
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1092

tccgccgtga gtacaaggca aaaaagatct ctgaggagga atacgtcact gccatcaagg 60

aggaaatcaa caaggtcgtn ccagcttcaa gaancagctt gacattgatg tgcttgtgca 120

tggcgagcct gagagaaacg atatggttga gtacttcggt gagcagctct ccggttttgc 180

gttcactgcc aatggctggg tgcagtctta tgggtcaagg tgcgtcaagc ctccgatcat 240

ctacggtgac gtgagccgcc ccaaccccat gaccgttttc tggtcgaaga ggcac 295

<210> 1093
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1093

ggtgcgtcaa gcctccgatc atctacggtg acgtgagccg ccccaacccc atgaccgttt 60

tctggtcgaa gaggcgcaga gcatgacgtc tcgcccaatg aaggggatgc tgactggccc 120

agtcacaatc ctcaactggt ccttcgtccg gaatgaccag ccgaggtttg agacttgcta 180

ccagatcgct cttgcgatca agaaggaagt cgaggatctc gaggctggtg gtattcaggt 240

tatccaaatc gacgaggctg cactgagaga agggctgccg ctccg 285

<210> 1094

<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1094

gctgcactga gagaagggct gccgctccgc aaggntgagc atgcattcta cttggactgg 60

gntgtccact ccttcagaat tnccaactgc gagatccagg acaccnccca gatccacacc 120

cacatgtgct actccaactt caacgacatc atccactcga tcatcgacat ggacgcggac 180

gtgatcacca ttgagaactc gcggtccgac ganaagctgc tctccgtgtt ccgcgagggc 240

gtcaagtacg gcgcgggcat cggccc 266

<210> 1095
<211> 327
<212> nucleic acid
<213> Zea mays

<400> 1095

gctgactggc ccagtcacaa tcctcaactg gtccttcgtc cggaatgacc agccgaggtt 60

tgagacttgc taccagatcg ctcttgcgat caagaaggaa gtcgaggatc ttgaggctgg 120

tggtattcag gttatccaaa tcgacgaggc tgcactgaga gaagggctgc cgctccgcaa 180

ggctgagcat gcattctact tggactgggc tgtccactcc ttcagaatta ccaactgcga 240

gatccaggac accacccaga tccacaccca catgtgctat ccaattcacg acatcatcca 300

tcgatcatcg ncatggngcg gcgtgat 327

<210> 1096
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1096

cagnacncac ccagatccac acccacatgt gctactccaa cttcaacgac atcatccact 60

ccatcatcga catggatgcc gatgtgatca cgatcgagaa ctcccggtct gacgagaagc 120

tactgtccgt cttccgtgag ggtgtgaagt acggagctgg cattggccct ggtgtctacg 180

acatccactc tcctaggatt ccctccaccg aggagatcgc agaccgcgtc gagaagatgc 240

tcgcngtgtn gananaant 259

<210> 1097
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1097

cgacgagaag ctactgtccg tgttccgcga nggtgtgaag tacggagctg gaatcggtcc 60

aggtgtctac gacatccact cgcccaggat cccctccacc gaggagatcg cggaccgcgt 120

caacaagatg ctcgccgtgc tcgacaccaa catcctctgg gtgaaccctg actgcggtct 180

caagacacgc aagtacacgg aggtgaagcc tgccctgacc aacatggtct ccgccaccaa 240

gctcatccgc acccagctcg gcagcgcgaa atgagtcaga 280

<210> 1098
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1098

gcgtcctcct cacctatcat cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag 60

atggcgtccc acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca 120

cttgagtctt tctgggatgg gaagagcacc gctgaggatc tggagaaggt tgctaccgac 180

ctcagggcca gtatctggaa gcagatggct gatgctggga tcaagtacat ccccagcaac 240

actttctcgt actatgacca ggtccttgac accactgcca tgctcggcgc tgtccccgaa 300

cgt 303

<210> 1099
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1099

cctcacctat catcgccgct gcgccgtctc ctccgctccc gtcgtccgga aagatggcgt 60

cccacattgt tggataccct cgcatgggcc ccaagaggga gctcaagttt gcacttgagt 120

ctttctggga tgggaagagc accgctgagg atctggagaa ggttgctacc gacctcaggg 180

ccagtatctg gaagcagatg gctgatgctg ggatcaagta catccccagc aacactttct 240

cgtactatga ccaggtcctt gacaccactg ccatgctcgg cgctgtcccc gaacgttact 300

catgg 305

<210> 1100
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1100

cngacgntgg ncgccgctgc gccgtctcct ccgctcccgt cgtccggaaa gatggcgtcc 60

cacattgttg gantaccctc gcatgggccc caagagggag ctcaagtttg cacttgagtc 120

tttctgggat gggaagagca ccgctgagga tctggagaag gttgctaccg acctcagggc 180

cagtatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca acactttctc 240

gtactatgac caggggcaac gccactgttc ctgctatgga gatgaccaag tggtttgaca 300

cca 303

<210> 1101
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1101

aggtgcgtca agcctccgat catctacggt gacgtgagcc gccccaaccc catgaccgtt 60

ttctggtcga agaggcacag agcatgacgt ctcgcccaat gaaggggatg ctgactggcc 120

cagtcacaat cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gagacttgct 180

accagatcgc tcttgcgatc aagaaggaag tcgaggatct tgaggctggt ggtattcagg 240

ttatccaaat cgacgaggct gcactgagag aagggctgcc gctccgca 288

<210> 1102
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1102

cccacatgtg ctactccaac ttcaacgaca tcatccactc gatcatcgnc catggacgcg 60

gacgtgatca ccatcgagaa ctcgcggtcc gacgagaagc tgctctccgt gttccgtgag 120

ggtgtcaagt acggcgcggg catcggcccc ggtgtctacg acatccactc ccccaggatc 180

ccgtcggccg aggagatcgc cgaccgcatc gacaagatgc tggccgtgct ggacaccaac 240

atcctctggg tgaaccccga ctgcggcctc aagac 275

<210> 1103
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1103

gtgagccgcc ccaaccccat gaccgttttc tggtcgaaga cgggcgcaga gcatgacgtc 60

tcgcccaatg aaggggatgc tgactggccc agtcacaatc ctcaactggt ccttcgtccg 120

gaacgaccag ccgaggtttg agacttgcta ccagatcgct cttgcgatca agaaggaagt 180

cgaggatctt gaggctggtg gtattcaggt tatccaaatc gacgaggctg cactgagaga 240

agggctgccg ctccgcaagg ctgagcatgc attctacttg gatgggctgt ccatccttca 300

gaataccaac tgcgagatc 319

<210> 1104
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1104

ctcttgctaa ggcattggct ggtcaaaagg atgaggctta cttcgcagca aatgctgctg 60

ctcaggcctc gaggaaatcc tcaccccgtg tgaccaatga agaagtccag aaggctgctg 120

ctgctctcaa gggctctgac caccgccgtg ggaccaacgt tagtgctaga ttggatgccc 180

agcagaagaa gcttaacctc cccatccttc ccaccactac aatcggttcg ttcccacaaa 240

ccgttgagct caggagggtc cgccgtgagt acaangc 277

<210> 1105
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 1105

caagaagagc ttgacattga tgtgcttgtg catggcgagc ctgagagaaa cgatatggtt 60

gagtacttcg gtgagcagct ctccggtttt gcgttcactg ccaatggctg ggtgcagtct 120

tatgggtcaa ggtgcgtcaa gcctccgatc atctacggtg angcnnaccg ccccaacccc 180

atgaccgttt tctggtcgaa gacggcacag agcatgacgt ctcgcccaat gaaggggatg 240

ctgactggcc cagtcacaat cctcaatggt ccttcgtccg gaatgaccan ccgangtttg 300

agattnct 308

<210> 1106
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 1106

ggaggctaag gcgctcggtg ttgataccgt gccagtactt gttggaccag tctcgtacct 60

gttgctctca aagcccgcca agggtgtgga gaagggattc cctcttcttt cccttcttag 120

cagcatcctc ccagtctaca aggaggtcat tgctgagttg aaggcagctg ggcttcatg 180

gattcagttt gatgagccca ctcttgtcct cgaccttgat tctgacaaat tggctgcatt 240

ctctgctgca tacgcagaac ttgaatctgt actttctgga ttgaatgtgc ttgttgagac 300

ttactttgct gat 313

<210> 1107
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1107

gatgaggctt acttcgcagc aaatgctgca gctcaggcct cgaggaaatc ctcaccccgt 60

gtgaccaatg aagaagtcca gaaggctgct gctgctctca agggctctga ccaccgccgt 120

gcgaccaacg ttagtgctag attggatgcc cagcagaaga agcttaacct ccccatcctt 180

cccaccacta caatcggttc gttcccacaa accgttgagc tcaggagggt ccgccgtgag 240

tacaaggcaa aaaagatctc tgaggaggaa tacgtcact 279

<210> 1108
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1108

aaacgaggag gtccaaaagg ctgcagctgc tttgaagggt tctgaccacc gccgtgctac 60

cactgttgct gctagattgg atgctcagca gaaaaagctc aaccttcctg tccttcccac 120

aaccacaatt ggttcattcc ctcagactgt ggaactcagg agggtccgtc gtgagtacaa 180

ggcaaagaag atctccgagg aggaatacat cagtgccatc aaggaagaaa tcagcaaggt 240

tgtcaagatc caagaggagc ttga 264

<210> 1109
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1109

ggttgatgct cttgctaagg cattggctgg tcaaaaggat gaggcttact tcgcagcaaa 60

tgctgctgct caggcctcga ggaaatcctc accccgtgtg accaatgaag aagtccagaa 120

ggctgctgct gctctcaagg gctctgacca ccgccgtggg accaacgtta gtgctagatt 180

ggatgcccag cagaagaagc ttaacctccc catccttccc accactacaa tcggttcgtt 240

cccacaaacc gttgagctca ggagggtccg ccgtg 275

<210> 1110
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1110

ctcatggact ggaggagaga ttggatttga cacctacttc tccatggcca ggggcaacgc 60

cactgttcct gctatggaga tgaccaagtg gtttgacacc aactaccact ttattgtccc 120

tgaattgggc ccaaacacca agttctccta tgcttctcac aaggctgtta acgaatataa 180

ggaggctaag gcgctcggtg ttgataccgt gccagtactt gttggaccag tctcgtacct 240

gttgctctca aagcctgcca agggtgtgga gaagggat 278

<210> 1111
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1111

cacctatcat cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc 60

acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt 120

tctgggatgg gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca 180

gtatctggaa gcagatggct gatgctggga tcaagtacat ccccagcaac accttctcgt 240

actatgacca ggtccttgac accactgcca tgctcggcgc tgtccccana acgctactca 300

tggactggag 310

<210> 1112
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1112

gtcactgcca tcaaggagga aatcaacaag gtcgttaagc tccaagaaga gcttgacatt 60

gatgtgcttg tgcatggcga gcctgagaga aacgatatgg ttgagtactt cggtgagcag 120

ctctccggtt ttgcgttcac tgccaatggc tgggtgcagt cttatgggtc aaggtgcgtc 180

aagcctccga tcatctacgg tgacgtgagc cgccccaacc ccatgaccgt tttctggtcg 240

aagacggcgc agagcatgac gtctc 265

<210> 1113
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1113

cgacgagaag ctactgtccg tgttccgcga gggtgtgaag tacggagctg gaatcggtcc 60

aggtgtctac gacatccact tcgcccagga tcccctccac cgaggagatc gcggaccgcg 120

tcaacaagat gctcgccgtg ctcgacacca acatcctctg ggtgaaccct gactgcggtc 180

tcaagacacg caagtacacg gaggtgaagc ctgccctgac caacatggtc tccgccacca 240

agctcatccg cacccagctc ggcagcgcga aatgagtcag atttggtaga tccatggttt 300

gttga 305

<210> 1114

<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1114

gtggtttgac accaactacc actttattgt ccctgaattg ggcccaaaca ccaagttctc 60

ctatgcttct cacaaggctg ttaacgaata taaggaggct aaggcgctcg gtgttgatac 120

cgtgccagta cttgttggac cagtctcgta cctgttgctc tcaaagcctg ccaagggtgt 180

ggagaaggga ttccctcttc tttcccttct tagcagnact tcccagtcta caaggaggtc 240

attgctgagt tgaaggcagc tggggcttca ggattcagtt tgatgagccc atcttgtcct 300

cgactngatt 310

<210> 1115
<211> 331
<212> nucleic acid
<213> Zea mays

<400> 1115

taagcttcaa gaagagcttg acattgatgt gcttgngcat ggcgagcctg anagaaacga 60

tatggttgag tacttcggtg agcagctctc cggttttgcg ttcactgcca atggcngggt 120

gcagtcttat gggtcaaggt gcgtcaagcc tccgatcatc tacggtgacg tgagccgccc 180

caaccccatg accgttttct ggtcgaagac gggcacagag catgacgtct cgcccaatga 240

angggatgct gactggccca gtcacaatcc tcnactggtc ttcgtccgga atgaccagcc 300

gangttgaga ttgctacnag atcgctcttg c 331

<210> 1116
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1116

aacaaggtcg ttaagcttca agaagagctt gacattgatg tgcttgtgca tggcgagcct 60

gagagaaacg atatggttga gtacttcggt gagcagctct ccggttttgc gttcactgcc 120

aatggctggg tgcagtctta tgggtcaagg tgcgtcaagc ctccgatcat ctacggtgac 180

gtgagccgcc ccaaccccat gaccgttttc tggtcgaaga ggcacagagc atgacgtctc 240

gcccaatgaa ggggatgctg actggcccag tcacaatcc 279

<210> 1117
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1117

atcgccgctg cgccgtctcc tccgctcccg tcgtccggaa agatggcgtc ccacattgtt 60

ggataccctc gcatggggcc ccaagaggga gctcaagttt gcacttgagt ctttctggga 120

tgggaagagc accgctgagg atctggagaa ggttgctacc gacctcaggg ccagtatctg 180

gaagcagatg gctgatgctg ggatcaagta catccccagc aacactttct cgtactatga 240

ccaggtcctt gacaccactg ccatgctcgg cgctgtcccc gaacgttact ca 292

<210> 1118
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1118

gaggaaatca acaaggtcgt taagctccaa gaagagcttg acattgatgt gcttgtgcat 60

ggcgagcctg agagaaacga tatggttgag tacttcggtg agcagctctc cggttttgcg 120

ttcactgcca atggctgggt gcagtcttat gggtcaaggt gcgtcaagcc tccgatcatc 180

tacggtgacg tgagccgccc caaccccatg accgttttct ggtcgaagag gcgcagagca 240

tgacgtctcg cccaatgaag gggatgctga 270

<210> 1119
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 1119

cagcagaaga agcttaacct acccatcctt ccncccacta caataggttc gttcccacaa 60

accgttgagc tcaggagggt ccgccgtgag tacaaggcaa aaaagatctc tgaggaggaa 120

tacgtcactg ccatcaagga ggaaatcaac aaggtcgtta agctccaaga agagcttgac 180

attgatgtgc ttgtgcatgg cgagcctgag agaaacgata tggttgagta cttcggtgag 240

cagctctccg gt 252

<210> 1120
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1120

cgttttctgg tcgaagaggc acagagcatg acgtctcgcc caatgaaggg gatgctgact 60

ggcccagtca caatcctcaa ctggtccttc gtccggaatg accagccgag gtttgagact 120

tgctaccaga tcgctcttgc gatcaagaag gaagtcgagg atcttgaggc tggtggtatt 180

caggttatcc aaatcgacga ggctgcactg agagaagggc tgccgctccg caaggctgag 240

catgcattct acttggactg ggctgtccac tccttcagaa ttac 284

<210> 1121
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1121

cgctcatgca caccgctgtg gatcttgtga acgagactaa gcttgacagc gagattaagt 60

cttggcttgc ttttgctgcc cagaaggttg ttgaggttga tgctcttgct aaggcattgg 120

ctggtcaaaa ggatgaggct tacttcgcag caaatgctgc tgctcaggcc tcgaggaaat 180

cctcaccccg tgtgaccaat gaagaagtcc agaaggctgc tgctgctctc aagggctctg 240

accaccgccg tgggaccaac gttagtgcta gattggatgc ccagcag 287

<210> 1122
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1122

cggacntggn ccgctgtgga tcttgtgaac gagactaagc ttgacagcga gattaagtct 60

tggcttgctt ttgctgccca gaaggttgtt gaggttgatg ctcttgctaa ggcattggct 120

ggtcaaaagg atgaggctta cttcgcagca aatgctgcag ctcaggcctc gaggaaatcc 180

tcaccccgtg tgaccaatga agaagtccag aaggctgctg ctgctctcaa gggctctgac 240

caccgccgtg cgaccaacgt tagtgctaga ttggatgccc agcagaagaa 290

<210> 1123
<211> 344
<212> nucleic acid
<213> Zea mays

<400> 1123

cgtcactgcc atcaaggagg naatcaacaa ggtcgttaag cttcaagaag agcttgacat 60

tgatgtgctt gtgcatggcg agcctgagag aaacgatatg gttgagtact tcggtgagca 120

gctctccggt tttgcgttca ctgccaatgg ctgggtgcag tcttatgggt caaggtgcgt 180

caagcctccg atcancnacg gtgacgtgag ccgccccaac cccatgaccg ttttctggtc 240

gaagacggca cagagcatga cgtctcgccc atgangggat gctgctggcc catcacaanc 300

ctcaatngtc cttcgtccgg atgaccagcg agttgagntt ctac 344

<210> 1124
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1124

cgtcactgcc atcaaggagg aaatcaacaa ggtcgttaag ctcnaagaag agcttgacat 60

tgatgtgctt gtgcatggcg agcctgagag aaacgatatg gttgagtact tcggtgagca 120

gctctccggt tttgcgttca ctgccaatgg ctgggtgcag tcttatgggt caaggtgcgt 180

caagcctccg atcatctacg gtgacgtgag ccgccccaac cccatgaccg ttttctggtc 240

gaagacggcg caaagcatga c 261

<210> 1125
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1125

gcacgcgtgg gcgacatgga cgcggacgtg atcaccattg agaactcgcg gtccgacgag 60

aagctgctct ccgtgttccg annggcgtc aaacncggcg cgggcatcgg ccccggtgtc 120

tacgacatcc actcccccag gatcccgtcg gctgaggaga tcgccgaccg catcgacaag 180

atgctggcgg tgctggacac caacatcctc tgggtgaacc ccgactgcgg cctcaagacc 240

cgcaagtaca cggaggtcaa gcccgccctg accaacatgg tctccgccgc taagctcatc 300

c 301

<210> 1126
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1126

gggctgtcca ctccttcaga attaccaact gcnagatcca ggacaccacc cagatccaca 60

cccacatgtg ctactccaac ttcaacgnca tcatccactc gatcatcgac atggacgcgg 120

acgtgntcac cattgagaac tcgcggtccg acgagaagct gctctccgtg ttccgcgagg 180

gcgtcaagta cggcgcgggc atcggccccg gtgtctacga catccnctcc cccaggatcc 240

cgtcggctga ggagatcgcc gacc 264

<210> 1127
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1127

atcatccact cgatcatcga catggacgcg gacgtgatca ccattgagaa ctcgcggtcc 60

gacgagaagc tgctctccgt gttccgcgag ggcgtcaagt acggcgcggg catcggcccc 120

ggtgtctacg acatccactc ccccaggatc ccgtcggctg aggagatcgc cgaccgcatc 180

gacaagatgc tggcggtgct ggacaccaac atcctctggg tgaaccccga ctgcggcctc 240

aagacccgca agtacacgga ggtcaagccc gcctgac 277

<210> 1128
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 1128

gggctgtcca ctctttcagg atcaccaact gcggagtcca ggacaccacc cagatccaca 60

cccacatgtg ctactccaac ttcaacggac atcatccact ccatcatcga catggatgcc 120

gatgtgatca cgatcgagaa ctcccgatct gacgagaagc tactgtccgt cttccgtgag 180

ggtgtgaagt acggagctgg cattggccct ggtgtctacg acatccactc tcctaggatt 240

ccctcc 246

<210> 1129
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1129

aaatcaacaa ggtcgttaag ctccaagaag agcttgacat tgatgtgctt gtgcatggcg 60

agcctgagag aaacgctatg gttgagtact tcggtgagca gctctccggt tttgcgttca 120

ctgccaatgg ctgggtgcag tcttatgggt caaggtgcgt caagcctccg atcatctacg 180

gtgacgtgag ccgccccaac cccatgaccg ttttctggtc gaagaggcgc agagcatgac 240

gtctcgccca atgaagggga tgctgactgg 270

<210> 1130
<211> 492
<212> nucleic acid
<213> Zea mays

<400> 1130

ttannttccg cgccagtaag gtaagaattc ccgggncgac ccacgcgtca gtgagaactc 60

gcggtccgac gagaagctgc tctccgtgtt ccgcgagggc gtcaagtacg gcgcgggcat 120

cggccccggt gtctacgaca tccactcccc caggatcccg tcggctgagg agatcgccga 180

ccgcatcgac aagatgctgg cggtgctgga caccaacatc ctctgggtga accccgactg 240

cggcctcaag acccgcaagt acacggaggt caagcccgcc ctgaccaaca tggtctccgc 300

cgctaaagct catccgcacc cagctcgcca gcgccaagtg agcacctttt ttttgccttt 360

ttcgtttccg aaganggcgt cntcgatgcc aatttgtttc caataaacan ggctgtnncc 420

cgccgttccg gttgtnancc gttcggtggt aaggttanna attttcctga atttcccccc 480

aanggcggtt ng 492

<210> 1131
<211> 250
<212> nucleic acid

<213>   Zea mays

<400>   1131

aactcaggag ggttcgccgt gaatacaagg cnaagaagat caccgaggac gaatacatca   60

gtgccatcaa ggaagaaatc agcaaggttg tcaagatcca agaggagctt gacattgatg   120

tgcttgtgca tggagagcca gagagaaatg acatggttga gtacttcggt gncnaattat   180

ctggttttgc gttcactgcc aacggatggg tgcaatccta tggatcacgc tgtgtgaagc   240

cacccattat   250

<210>   1132
<211>   262
<212>   nucleic acid
<213>   Zea mays

<400>   1132

tcttggcttg cttttgctgc ccagaaggtt gttgaggttg atgctcttgc taaggcattg   60

gctggtcaaa aggatgaggc ttacttcgca gcaaatgctg ctgctcaggc ctcgaggaaa   120

tcctcacccc gtgtgaccaa tgaagaagtc cagaaggctg ctgctgctct caagggctct   180

gaccaccgcc gtgggaccaa cgttagtgct agattggatg cccagcagaa gaagcttaac   240

ctccccatcc ttcccaccac ta   262

<210>   1133
<211>   269
<212>   nucleic acid
<213>   Zea mays

<400>   1133

gctgctcagg cctcgaggaa atcctcaccc cgtgtgacca atgaagaagt ccagaaggct   60

gctgctgctc tcaagggctc tgaccaccgc cgtgcgacca acgttagtgc tagattggat   120

gcccagcaga agaagcttaa cctccccatc cttcccacca ctacaatcgg ttcgttccna   180

caaaccgttg agctcaggag ggtccgccgt gagtacaagg caaaaaagat ctctgaggag   240

gaatacgtca ctgccatcaa ggaggaaat   269

<210>   1134
<211>   269
<212>   nucleic acid

<213> Zea mays

<400> 1134

cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc acattgttgg 60

ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca gtatctggaa 180

gcagatggct gatgctggga tcaagtacat ccccagcaac accttctcgt actatgacca 240

ggtccttgac accactgcca tgctcggcg 269

<210> 1135
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1135

gcgatcaaga aggaagtcga ggatcttgag gctggtggta ttcaggttat ccaaatcgac 60

gaggctgcac tgagagaagg gctgccgntc cgcaaggctg agcatgcatt ctacttggac 120

tgggctgtcc actccttcag aattaccaac tgcgagatcc aggacaccac ccagatccac 180

acccacatgt gctantccaa cttcaacgac atcatccact cgatcatcga catggacgng 240

gacgtgatna ccattgagaa ntcgggtccg angggnagct gctctcngtg ttcngggag 299

<210> 1136
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1136

ctcaccccgt gtgaccaatg aagaagtcca gaaggctgct gctgctctca agggctctga 60

ccaccgccgt gggaccaacg ttagtgctag attggatgcc cagcagaaga agcttaacct 120

ccccatcctt cccaccacta caatcggttc gttcccacaa accgttgagc tcaggagggt 180

ccgccgtgag tacaaggcaa aaaagatctc tgaggaggaa tacgtcactg ccatcaagga 240

ggaaatcaac aaggtcgtta agcttcaaga agagct 276

<210> 1137
<211> 257
<212> nucleic acid

<213> Zea mays

<400> 1137

ccaactgcga gatccaggac accacccaga tccacaccca catgtgctac tccaacttca 60

acgacatcat ccactcgatc atcgacatgg acgcggacgt gatcaccatc gagaactcgc 120

ggtccgacga gaagctgctc tccgtgttcc gtgagggtgt caagtacggc gcgggcatcg 180

gccccggtgt ctacgacatc cactccccca ggatcccgtc ggccgaggag atcgccgacc 240

gcatcgacaa gatgctg 257

<210> 1138
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1138

gcttacttcg cagcaaatgc tgctgctcag gcctcgagga aatcctcacc ccgtgtgacc 60

aatgaagaag tccagaaggc tgctgctgct ctcaagggct ctgaccaccg ccgtgggacc 120

aacgttagtg ctagattgga tgcccagcag aagaagctta acctccccat ccttcccacc 180

actacaatcg gttcgttccc acaaaccgtt gagctcagga gggtccgccg tgagtacaag 240

gcaaaaaaga tctctgagga ggaatacgtc actgc 275

<210> 1139
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1139

agatggcaca gagcatgacc cctcgtccca tgaagggaat gttgactggt ccggtcacaa 60

tcctgaactg gtcattcgtc aggaacgacc agcctaggtt tgagacatgc taccaaatag 120

ctcttgcaat caaaaaggag gttgaggatc ttgaggctgc tggtattcag gtgatccaga 180

tcgatgaggc agctctaagg gagggtctgc cactacgcaa gtcagagcat gcattctacc 240

tggactgggc tgtccactct ttcaggatca ccaactgcgg agtccaggac accac 295

<210> 1140
<211> 316
<212> nucleic acid

<213> Zea mays

<400> 1140

gcattctctg ctgcatacgc agaacttgaa tctgtacttt ctggattgaa tgtgcttgtt 60

gagacttact ttgctgatgt tcctgctgag tcctacaaga ccctaacatc cctgagcagt 120

gtgactgctt atggttttga tcttgtccgt ggaacccaaa ctcttgggct tgtcacgagt 180

gctggtttcc ctgctggaaa gtacctcttt gctggtgttg tggatggacg caacatctgg 240

gctgatgatc ttgctacatc tctcagcact ctccagtctc ttgaggctgt tgttgggaag 300

gacaagcttg tcgtat 316

<210> 1141
<211> 445
<212> nucleic acid
<213> Zea mays

<400> 1141

ccactcttgt cctcgacctt gattctgaca aattggctgc attctctgct gcatacgcag 60

aacttgaatc tgtactttct ggattgaatg tgcttgttga gacttacttt gctgatgttc 120

ctgctgagtc ctacaagacc ctaacatctc tgagcagtgt gactgcctat ggttttgatc 180

ttgtccgtgg aacccaaact cttgggcttg tcacgagtgc tggtttccct gctggaaagt 240

acctctttgc tggtgttgtg gatggacgca acatctgggc tgatgatctt gctacatctc 300

taacactctt cagtctcttg aggctgttgt tgggaangac aagcttgtcg atcaacttnc 360

tgctcgctca tgcacaccgn tgtggatctt gngaaccaga ctnagcttga cagcagatna 420

atctggcttg ctttgctgcc anaag 445

<210> 1142
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1142

gccaagacgg ttgttgaggt tgatgctctt gctaaggcat tggctggtca aaaggatgag 60

gcttacttcg cagcaaatgc tgcagctcag gcctcgagga aatcctcacc ccgtgtgacc 120

aatgaagaag tccagaaggc tgctgctgct ctcaagggct ctgaccaccg ccgtgcgacc 180

aacgttagtg ctagattgga tgcccagcag aagaagctta acctccccat cttcccacca 240

tacaatcggt tcgttcccac aaaccgttga gctcaggagg gtccgccgtg agtacaaggc 300

a 301

<210> 1143
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1143

gtggtattca ggttatccaa atcgacgagg ctgcactgag agaagggctg ccgctccgca 60

aggctgagca tgcattctac ttggactggg ctgtccactc cttcagaatc accaactgcg 120

agatccagga caccacccng atccacaccc acatgtgcta ctccaacttc aacgacatca 180

tccactcgat catcgacatg gacgcggacg tgatcaccat cgagaatcgc ggtccgacga 240

gaagctgctc tccgtgttcc gtgaggtgtc aagtacg 277

<210> 1144
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1144

cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc acattgttgg 60

ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagagcacc gctgaggatc tggagaangt tgctaccgac ctcagggcca gtatctggaa 180

gcagatggct gatgctggga tcaagtacat ccccagcaac actttctcgt actatgacca 240

ggtcctttga caccactgcc atgctcggcg ctgtccccga a 281

<210> 1145
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 1145

gccgtgctac cactgttgct gctagattgg atgctcagca gaaaaagctc aaccttcctg 60

tccttcccac aaccacaatt ggttcattcc ctcagactgt ggaactcagg agggtccgtc 120

gtgagtacaa ggcaaagaag atctccgagg aggaatacat cagtgccatc aaggaagaaa 180

tcagcaaggt tgtcaagatc caagaggagc ttgacattga tgtgcttgtg catggagagc 240

cagagag 247

<210> 1146
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1146

tgctgactgg cccagtcaca atcctcaact ggtccttcgt ccggaatgac cagccgaggt 60

ttgagacttg ctaccagatc gctcttgcga tcaagaagga agtcgaggat cttgaggctg 120

gtggtattca ggttatccaa atcgacgagg ctgcactgag agaagggctg ccgctccgca 180

aggctgagca tgcattctac ttggactggg ctgtccactc cttcagaatt accaactgcg 240

agatccagga caccacccag atccacac 268

<210> 1147
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1147

cggnacggtg gcnacctatc atcgccgctg cgccgtctcc tccgctcccg tcgtccggaa 60

agatggcgtc ccacattgtt ggataccctc gnntgggccc caagagggag ctcaagtttg 120

cacttgagtc tttctgggat gggaagagca ccgctgagga tctggagaag gttgctaccg 180

acctcagggc cagtatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca 240

acactttctc gtactatgac caggtccttg acaccactgc catgctcggc 290

<210> 1148
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1148

caaggagatc atcgcccagg gtgacaaacg aggaggtcca gaaggctgca gctgctttga 60

ggggatctga ccaccgccgt tctaccactg tttctgctag attggatgct cagcagaaaa 120

agctcaacct tcctgtcctt cccacaacca caattggttc attccctcag actgtggaac 180

tcaggagggt tcgccgtgaa tacaaggcaa agaagatcac cgaggacgaa tacatcagtg 240

ccatcaagga agaaatcagc aaggttgtc 269

<210> 1149
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1149

caagaagagc ttgacatnna tgtncttgtn catngcgagc ctgagagaaa cgatatggtt 60

gagnacntcg gtgagcagct cnccggtttt gcgttcacng ccaatggctg ggtgcagtct 120

tatgggtcaa ggtgcgtcaa gcctccgatc atctacggtg acgtgagcng ccccaacccc 180

atgaccgttt tcnggtcgaa gacngcgcag agcatgacgt ctcgcccaat gaaggggatg 240

ctganggccc agtcacaatc ctcaacnggt ccttcgtccg 280

<210> 1150
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 1150

gagaactcgc ggtccgacga gaagctgctc tccgtgttcc gtgagggtgt caagtacggc 60

gcgggcatcg gccccggtgt ctacgacatc cactccccca ggatcccgtc ggccgaggag 120

atcgccgacc gcatcgacaa gatgctggcc gtgctggaca ccaacatcct ctgggtgaac 180

cccgactgcg gcctcaagac ccgcaagtac acggaggtca agcccgccct gaccaacatg 240

gtctccgctg ctaagtcatt cgcacccagc tcgccagcgc caagtgagca ctttttttgc 300

ctttttcgtt tccgaggagg ggt 323

<210> 1151
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 1151

caccacccac atctcagttc accccggcgt cgtcctcttc cccggcgct actctcccgc 60

tccacgttcc aaaggaaaga tggcgtccca tattgttgga taccctcgca tgggccccaa 120

gagagagctc aagtttgcct tggagtcttt ctgggatggg aagagcagcg ccgatgattt 180

agagaaagtt gcctctgacc tcaggtctag catctggaag caaatgtcag aagctgggat 240

caagtacatt cccagcaaca ccttctcgta ctatgaccag gtccttgata ccacggccat 300

gcttggtgtg tcccagagcg ctact 325

<210> 1152
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1152

ggacgtggac ttcgcatggg ccccaagagg gagctcaagt ttgcacttga gtcantctgg 60

gatgggaaga gcaccgctga ggatctggag aaggttgcta ccgacctcag ggccagtatc 120

tggangcaga tggctgatgc tgggatcaag tacatcccca gcaacacctt ctcgtactat 180

gaccaggtcc ttgacaccac tgccatgctc ggcgctgtcc ccgaacgcta ctcatggact 240

ggaggagaga ttgggtttga cacctacttc tc 272

<210> 1153
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1153

gggctgtcca ctccttcaga atcaccaact gcgagatcca ggacaccacc cagatccaca 60

cccacatgtg ctactccaac ttcaacgaca tcatccactc gatcatcgac atggacgcgg 120

acgtgatcac catcgagaac tcgcggtccg acgagaagct gctctccgtg ttccgtgagg 180

gtgtcaagta cggcgcgggc atcggccccg gtgtctacga catccactcc cc 232

<210> 1154
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1154

atcgacgagg ctgcactgag agaagggctg ccgctccgca aggctgagca tgcattctac 60

ttggactggg ctgtccactc cttcagaatc accaactgcg aaatccagga caccacccag 120

atccacaccc acatgtgcta ctccacttca acgacatcat ccactcgatt nccgacatgg 180

acgcggacgt gatcaccatc gagaactcgc ggtccgacga gaagctgctc tccgtgttcc 240

gtgaggtgtc aagtacggcg cgggcatcgg ccccggtgtc tacga 285

<210> 1155
<211> 327
<212> nucleic acid
<213> Zea mays

<400> 1155

cccggtctga cgagaagcta ctgtccgtct tccgtgaggg tgtgaagtac ggagctggca 60

ttggccctgg tgtctacgac atccacttct cctaggattc cctccaccga ggagatcgca 120

gaccgcgtcg agaagatgct cgccgtgctc gacaccaaca tcctctgggt gaaccctgac 180

tgtggtctca agacacgcaa gtacacggag gtcaagcccg ccctgaccaa catggtctcg 240

gccaccaagc tcatccgcac ccagcttgcc agcgcgaaat gagtcgtttg atagtccatg 300

gtctgatagc gcggaatgag ccagttt 327

<210> 1156
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1156

cgtgatcacc attgaganct cgcggtccga cgagaagctg ctctccgtgt tccgcgaggn 60

gcgtcaagta cggcgcgggc atcggccccg gtgtctacna catccactcc cccaggatcc 120

cgtcggctga ggagatcgcc gaccgcatcg acaagatgct ggcggtgctg gacaccaaca 180

tcctctgggt gaaccccgac tgcggcctca agacccgcaa gtacacggag gtcaagcccg 240

ccctgaccaa catggtctcc gccgctaagc tcatccgcac ccag 284

<210> 1157
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1157

gtcttgggct tgcttttgct gcccagaagg ttgttgaggt tgatgctctt gctaaggcat 60

tgggctggtc aaaaggatga ggcttacttc gcagcaaatg ctgctgctca ggcctcgagg 120

aaatcctcac cccgtgtgac caatgaagaa gtccagaagg ctgctgctgc tctcaagggc 180

tctgaccacc gccgtgggac caacgttagt gctagattgg atgcccagca gaagaagctt 240

aacctcccca tccttcccac cactacaatc ggttcgttcc cacaaaccgt tga 293

<210> 1158
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1158

cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgnccc acattgttgg 60

ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagggcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca gtatctggaa 180

gcagatggct gatgctggga tcaagtacat ccccagaanc actttctcgt actatgacca 240

agtcttgaca ccatgccatg ctcggcgctg tccccgaacg ttactcatgg actggaggag 300

agatggatt 309

<210> 1159
<211> 462
<212> nucleic acid
<213> Zea mays

<400> 1159

cgtgcggtgn tccgcgaggg cgtcaagtac ggcgcnggca tcggccccgg tgtctacgac 60

ntccactccc ccaggatccc gtcggctgag gagatcgccg accgcatcga caagatgctg 120

gcggtgctgg acaccaacat cctctgggtg aaccccgact gcggcctcaa gacccgcaag 180

tacacggagg tcaagcccgc cctgaccaac atggtctccg ccgctaagct catccgcacc 240

cagctcgcca gcgccaagtg agcacctttt ttttgccttt ttcgtttccg aggagggccg 300

tcgtcgatgc caatttgttt ccaataaaca gggcttgtgc ccgccgttct gttgtactcc 360

gtctgtggtt aggttaagta gttttcttga tctcgccccc acgcggtacc tgntttacta 420

ctctctggtt ggtgggttct gaagcaaagt tnnccgttta ct 462

<210> 1160
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 1160

ggctgcactg agagaagggc tgccgctccg caaggctgag catgcattct acttggactg 60

ggctgtccac tccttcagaa tcaccaactg cgagatccag gacaccaccc agatccacac 120

ccacatgtgc tactccaact tcaacgacat catccactcg atcatcgaca tggacgcgga 180

cgtgatcacc atcgagaact cgcggtccga cgagaagctg ctctccgtgt t 231

<210> 1161
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1161

gttgactggt ccggtcacaa tcctganctg gtcattcgtc aggaacgacc agcctaggtt 60

tgagacatgc taccaaatag ctcttgcaat caaaaaggag gttgaggatc ttgaggcnnc 120

nggtattcag gtgatccaga tcgatgaggc agctctaagg gagggtctgc cactacgcaa 180

gtcagagcat gcattctacc tggactgggc tgtccactct ttcaggatca ccaactgcgg 240

agtccaggac accacccaga tccacaccca catgt 275

<210> 1162
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1162

gagagattgg atttgacacc tacttctcca tggccagggg caacgccact gttcctgcta 60

tggagatgac caagtggttt gacaccaact accactttan tgtccctgga nttgggccca 120

aacaccaagt tctcctatgc ttctcacaag gctgttaacg aatataagga ggctaaggcg 180

ctcggtgttg ataccgtgcc agtacttgtt ggaccagtct cgtacctgtt gctctcaaag 240

cctgccaagg gtgtggagaa gggattcnct cttctttccc ttcttagcag 290

<210> 1163

<211> 342
<212> nucleic acid
<213> Zea mays

<400> 1163

cngtgacgtg agccgcccca accccatgac cgttttctgg tcgaagacgg cgcagagcat 60

gacgtctcng ccaatgaaag gngatgctga ctggcccagt ncacaatcct caactggtcc 120

ttcgtccgga atgaccagcc gaggtttgag acttgctacc agatcgctct tgcgatcaag 180

aaggaagtcg aggatctcga ggctggtggt attcaggtta tccaaatcga cgaggctgca 240

ctgagagaag ggctgccgct ccgcaaggct gagcatgcat ctacttggac tgggctgtcc 300

atccttcaga atcaccaatg cgnagaccag gacaccaccc ag 342

<210> 1164
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1164

aaccccatga ccgttttctg gtcgaagagg cacagagcat gacgtctcgc ccaatgaagg 60

ggatgctgac tggcccagtc acaatcctca actggtcctt cgtccggaat gaccagccga 120

ggtttgagac ttgctaccag atcgctcttg cgatcaagaa ggaagtcgag gatcttgagg 180

ctggtggtat tcaggttatc caaatcgacg aggctgcact gagagaaggg ctgccgctcc 240

gcaaggctga gcatgcattc tact 264

<210> 1165
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1165

gtccagaagg ctgcagctgc tttgagggga tctgaccacc gccgttctac cactgtttct 60

gctagattgg atgctcagca gacaaagctc aaccttnctg tccttcccac aaccacaatt 120

gnttcattcc ctcagactgt ggaactcagg agggttcgcc gtgaatacaa ggcaaagaag 180

atcaccgagg acgaaaanat cagtgccatc aaggaagaaa ttcagcaagg ttgtcaagat 240

ccaagaggag ntgacattga tgtgcttgtg catggagagc cagagagaat gacatggt 298

<210> 1166
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1166

gcttgacatt gatgtgcttg tgcatggaga gccagagaga aatgacatgg ttgagtactt 60

cggtgagcaa ttatctggtt ttgcgttcac tgccaacgga tgggtgcaat cctatggatc 120

acgctgtgtg aagccaccca ttatctacgg tgatgtcagc cggccgaacc ccatgactgt 180

tttctggtcc aagatggcac agagcatgac ccctcgtccc atgaag 226

<210> 1167
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 1167

gtccggaatg accagccgag gtttgagact tgctaccaga tcgctcttgc gatcaagaag 60

gaagtcgagg atcttgaggc tggtggtatt caggttatcc aaatcgacga ggctgcactg 120

agagaagggc tgccgctccg caaggctgag catgcattct acttggactg ggctgtccac 180

tccttcagaa ttaccaactg cgagatccag gacaccaccc agatccacac ccacatgtgc 240

tactccaact tcaa 254

<210> 1168
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 1168

ctccggtttt gcgttcactg ccaatggctg ggtgcagtct tatgggtcaa ggtgcgtcaa 60

gcctccgatc atctacggtg acgtgagccg ccccaacccc atgaccgttt tctggtcgaa 120

gaggcgcaga gcatgacgtc tcgcccaatg aaggggatgc tgactggccc agtcacaatc 180

ctcaactggt ccttcgtccg gaatgaccag ccgaggtttg agacttgcta ccagatcgct 240

cttgcgatca a 251

<210> 1169

<211>	279
<212>	nucleic acid
<213>	Zea mays

<400>	1169

atcgccgctg cgccgtctcc tccgctcccg tcgtncggaa agatggcgtc ccacattgtt 60

ggataccctc gcatgggccc caagagggag ctcaagtttg cacttgagtc tttctgggat 120

gggaagagca ccgctgagga tctggagaag gttgcnacng aacttnaggg ccagtatctg 180

gaagcagang gctgatgctg ggatcaagta catccccagc aacactttct cgtactatga 240

ccaggtcctt gacacnactg ccatgctggg gctggtccc 279

<210>	1170
<211>	268
<212>	nucleic acid
<213>	Zea mays

<400>	1170

atgggtcaag gtgcgtcaag cctccgatca tctacggtga cgtgagcngc cccaacccca 60

tgaccgtttt ctggtcgaag aggcgcagan catgacgtct cgcccaatga aggggatgct 120

gactggccca gtcacaatcc tcaactggtc cttcgtccgg aatgaccagc cgaggtttga 180

gacttgctac cagatcgctc ttgcgatcaa gaaggaagtc gaggatctcg aggctggtgg 240

tattcaggtt atccaaatcg acgaggct 268

<210>	1171
<211>	90
<212>	nucleic acid
<213>	Zea mays

<400>	1171

cgtcggctga ggagatcgcc gaccgcatcn acaagatgct ggcggtgctg gacaccaaca 60

tcntctgggt gaaccccgac tgcngcctca 90

<210>	1172
<211>	254
<212>	nucleic acid
<213>	Zea mays

<400>	1172

gtcctccgct cccgtcgtcc ggaaagatgg cgtcccacat tgttggatac cctcgcatgg 60

gccccaagag ggagctcaag tttgcacttg agtctttctg ggatgggaag agcaccgctg 120

aggatctgga gaaggttgct accgacctca gggccagtat ctggaagcag atggctgatg 180

ctgggatcaa gtacatcccc agcaacacct tntcgtacta tgaccaggtc cttgacacca 240

tgccatgctc ggnt 254

<210> 1173
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 1173

caaacgagga ggtccagaag gctgcagctg ctttgagggg atctgaccac cgccgttcta 60

ccactgtttc tgctagattg gatgctcagc agaaaaagct caaccttcct gtccttccca 120

caaccacaat tggttcattc cctcagactg tggaactcag gagggttcgc cgtgaataca 180

aggcaaagaa gatcaccgag gacgaataca tcagtgncat caaggaagaa atcagcaagg 240

ttgtcaagat c 251

<210> 1174
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 1174

ccgatgtgat cacgatcgag aactcccggt ctgacgagaa gctactgtcc gtcttccgtg 60

agggtgtgaa gtacggagct ggcattggcc ctggtgtcta cgacatccac tctcctagga 120

ttccctccac cgaggagatc gcagaccgcg tcgagaagat gctcgccgtg ctcgacacca 180

acatcctctg ggtgaaccct gactgtggtc tcaagacacg caagtacacg gaggtcaagc 240

ccgccc 246

<210> 1175
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 1175

gaacgatcag cctaggtttg agacatgcta ccaaatagct cttgcaataa aaaaggaggt 60

tgaggatctt gaggctgctg gtattcaggt gatccagatt gatgaggcag ctctaaggga 120

gggtctgcca ctgcgcaagt cagagcatgc attctacctg gactgggctg tccactcttt 180

cagaatcacc aactgcggag tccaggacac cacccagatc cacacccata tgtgctactc 240

caacttcaac gacatcat 258

<210> 1176
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1176

cggacntggn nagngnaaat cctcaccccg tgtgaccaat gaagaagtcc agaaggctgc 60

tgctgctctc aagggctctn aanaccgccg nngnaccaac gttagtgcta gattggatgc 120

ccagcagaag aagcttaacc tccccatcct tcccaccact acaatcggtt cgttcccaca 180

aaccgttgag ctcaggaggg tccgccgtga gtacaaggca aaaaagatct ctgaggagga 240

atacgtcact gccatcaagg aggaaatcaa caaggt 276

<210> 1177
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1177

acgagtgctg gtttccctgc tggaaagtac ctctttgctg gtgttgtgga tggacgcaac 60

atctgggctg atgatcttgc tacatctctc agcactctcc agtctcttga ggctgttgtt 120

gggaaggaca agcttgtcgt atcaacttcc tgctcgctca tgcacaccgc tgtggatctt 180

gtgaacgaga ctaagcttga cagcgagatt aagtcttggc ttgctttttg cccagaaggt 240

tgttgaggtt gatgctcttg ctaaggcatt ggctgggcca aaagatgagc ttacttc 297

<210> 1178
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1178

ggaggctaag gcgctcggtg ttgataccgt gccagtactt gttggaccag tctcgtacct 60

gttgctctca aagcctgcca agggtgtgga gaagggattc cctcttcttt cccttcttag 120

cagcatcctc ccagtctaca aggaggtcat tgctgagttg aaggcagctg ggcttcatg 180

gattcagttt gatgagccca ctcttgtcct cgaccttgat tctgacaaat tggctgcatt 240

ctctgctgca tacgcagaac ttgaatctgt actttctgga ttg 283

<210> 1179
<211> 84
<212> nucleic acid
<213> Zea mays

<400> 1179

ancttctngt actatgacca ggtccttgan accagtncca tgctcggcgc tgtccccgaa 60

cgctaccatg gactggacga gaga 84

<210> 1180
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1180

gtttgatgag cccactcttg tcctcgacct tgattctgac aaattggctg cattctctgc 60

tgcatacgca gaacttgaat ctgtactttc tggattgaat gtgcttgttg agacttactt 120

tgctgatgtt cctgctgagt cctacaagnc cctaacatcc ctgagcagtg tgactgctta 180

tggttttgat cttgtccgtg gaacccaaac tcttgggctt gtcacgagtg ctggtttccc 240

tgctggaaag tacctctttg ctggtgttgt ggatggacgc aacatctggg ctgatgatct 300

tgctacatct ctcag 315

<210> 1181
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1181

agccgcccca accccatgac cgttttctgg tcgaagaggc gcagagcatg acgtctcgcc 60

caatgaaggg gatgctgact ggcccagtca caatcctcaa ctggtccttc gtccggaatg 120

accagccgag gtttgagact tgctaccaga tcgctcttgc gatcaagaag gaagtcgagg 180

atctcgaggc tggtggtatt caggttatcc aaatcgacga ggctgcactg agagaagggc 240

tgccgtccgc aaggctgagc atgcatt 267

<210> 1182
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 1182

tgtgaagtac ggagctggca ttggccctgg tgtctacgac atccactctc ctaggattcc 60

ctccacagag gagatcgcag accgcgtcga gaagatgctc gccgtgctcg acaccaacat 120

cctctgggtg aaccctgact gtggtctcaa gacacgcaag tacacggagg tcaagcccgc 180

cctgaccaac atggtctcgg ccaccaagct catccgcacc cagcttgcca gcgcgaaatg 240

aggtcgttt 249

<210> 1183
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1183

ctcacctatc atcgccgctg cgccgtctcc tccgctcccg tcgtccggaa agatggcgtc 60

ccacattgtt ggataccctc gcatgggccc caagagggng ctcaagtttg cacttgagtc 120

tttctgggat gggaagagca ccgctgagga tctggagaag gttgctaccg acctcagggc 180

cagtatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca acactttctc 240

gtactatgac caggtcctt 259

<210> 1184
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 1184

ctaccaaata gctcttgcaa tcaaaaagga ggttgaggat cttgangctg ctggtattca 60

ggtgatccag atcgatgagg cagctctaag ggagggtctg ccactacgca agtcagagca 120

tgcattctac ctggactggg ctgtccactc tttcaggatc accaactgcg gagtccagga 180

caccacccag atccacaccc acatgtgcta ctccaacttc aacgacatca tccactccat 240

ccatcgacat gggatgccga tgtgatcacg atcgagaact cccggtctga ngagaa 296

<210> 1185
<211> 218
<212> nucleic acid
<213> Zea mays

<400> 1185

aggctgcact gagagaaggg ctgccgctcc gcaaggctga gcatgcattc tacttggact 60

gggctgtcca ctccttcaga atcaccaact gcgagatcca ggacaccacc cagatccaca 120

cccacatgtg ctactccaac ttcaacgaca tcatccactc gatcatcgac atggacgcgg 180

acgtgatcac catcgagaac tcgcggtccg acgagaag 218

<210> 1186
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1186

ctcctcacct atcatcgccg ctgcgccgtc tcctccgctc ccgtcgtccg gaaagatggc 60

gtcccacatt gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgcacttga 120

gtctttctgg gatgggaaga gcaccgctga ggatctggag aaggttgcta ccgacctcag 180

ggccagtatc tggaagcaga tggctgatgc tgggatcaag tacatcccca gcaacacttt 240

ctcgtactat gaccaggtcc t 261

<210> 1187
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1187

gcgtcccaca ttgttggata ccctcgcatg ggccccaaga gggagctcaa gtttgcactt 60

gagtctttct gggatgggaa gagcaccgct gaggatctgg agaaggttgc taccgacctc 120

agggccagta tctggaagca gatggctgat gctgggatca agtacatccc cagcaacact 180

ttctcgtact atgaccaggt ccttgacaac atgccatgct cggcgtgtcc ccgaacgtta 240

ctcatggatn gaggagagat ggattgacaa ctattctcca tg 282

<210> 1188
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1188

gtgcgtcaag cctccgatca tctacggtga cgtgagccgc cccaacccca tgaccntttt 60

ctggtcgaag aggcacagag catgacgtct cgcccaatga aggggatgct gactggccca 120

gtcacaatcc tcaatggtcc ttcgtccgga atgaccagcc gaggtttgag acttgctacc 180

agatcgctct tgcgatcaag aaggaagtcg aggatcttga ggctggtggt attcaggtta 240

tccaaatcga cgaggctgcc actgagagaa gggctgccgt ccgcaaggct gagcatca 298

<210> 1189
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 1189

cccagatcca cacccacatg tgctactcca acttcaacga catcatccac tncgatcatc 60

gacatggacg cggacgtgat caccatcgag aactcgcggt ccgacgagaa gctgctctcc 120

gtgttccgtg agggtgtcaa gtacggcgcg ggcatcggcc ccggtgtcta cgacatccac 180

tcccccagga tcccgtcggc cgaggagatc gccgaccgca tcgacaag 228

<210> 1190
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1190

cacaattggt tcattccctc agactgtgga actcaggagg gttccgccgt gaatacaagg 60

caaagaagat caccgaggac gaatacatca gtgccatcaa ggaagaaatc agcaaggncg 120

tcaagatcca agaggagctt gacattgatg tgcttgtgca tggagagcca gagagaaatg 180

acatggttga gtacttcggt gagcaattat ctggtttgcg ttcactgcca acggatgggt 240

gcaatcctat ggatcacgct tgtgtgaagc cacccattat 280

<210> 1191
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1191

ttgggaagga caagcttgtc gtatcaactt cctgctcgct catgcacacc gctgtggatc 60

ttgtgaacga gactaagctt gacagcgaga ttaagtctng gcttgctttt gctgcccaga 120

aggttgttga ggttgatgct cttgctaagg cattggctgg tcaaaaggat gaggcttact 180

tcgcagcaaa tgctgctgct caggcctcga ggaaatcctc accccgtgtg accatgaaga 240

agtccagaag gctgctgctg ctctcaaggg tctgaccacc gccgtgggac 290

<210> 1192
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 1192

gaccagccga ggtttgagac ttgctaccag atcgctcttg cgatcaagaa ggaagtcgag 60

gatcttgagg ctggtggtat tcaggttatc caaatcgacg aggctgcact gagagaaggg 120

ctgccgctcc gcaaggctga gcatgcattc tacttggact gggctgtcca ctccttcaga 180

attaccaact gcgagatcca ggacaccacc cagatccaca cccacatgtg ctactccaat 240

tca 243

<210> 1193
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1193

atggacgcag atgtgatcac catcgagaac tcccggtccg acgagaagct actgtccgtg 60

ttccgcgagg gtgtgaagta cggagctgga atcggtccag gtgtctacga catccactcg 120

cccaggatcc cctccaccga ggagatcgcg gaccgcgtca acaagatgct cgccgtgctc 180

gacaccaaca tcctctgggt gaaccctgac tgcggtctca aga 223

<210> 1194
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 1194

gctgactggc ccagtcacaa tcctcaactg gtccttcgtc cggaatgacc agccgaggtt 60

tgagacttgc taccagatcg ctcttgcgat caagaaggaa gtcgaggatc tcgaggctgg 120

tggtattcag gttatccaaa tcgacgaggc tgcactgaga gaagggctgc cgctccgcaa 180

ggctgagcat gcattctact tggactgggc tgtccactcc ttnagantca ccacngggag 240

atccng 246

<210> 1195
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1195

tggtggtatt cangatatcc aaatcgacga ngctgcactg agagaagggc tgccgctccg 60

caaggctgan catgcattct acttggactn ggctgtccac tccttcagaa ttaccaactg 120

cgagatccag gacaccaccc agatccacac ccacatgtgc tactccaact tcaacgacat 180

catccactcg atcatcgaca tggacgcgga cgtgatcacc attgagaact cg 232

<210> 1196
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 1196

gaaatcaaca aggtcgttaa gctccaagaa gagcttgaca ttgatgtgct tgtgcatggc 60

gagcctgaga gaaacgatat ggttgagtac ttcggtgagc agctctccgg ttttgcgttc 120

actgccaatg gctgggtgca gtcttatggg tcaaggtgcg tcaagcctcc gatcatctac 180

ggtgacgtga gccgccccaa ccccatgacc gttttctggt cgaagaggcg cagagcatga 240

cgtctcgc 248

<210> 1197

<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1197

gtggatggac gcaacatctg ggctgatgat cttgctacat ctctcagcac tctccagtct 60

cttgaggctg ttgttgggaa ggacaagctt gtcgtatcaa cttcctgctc gctcatgcac 120

accgctgtgg atcttgtgaa cgagactaag cttgacagcg agattaagtc ttggcttgct 180

tttgctgccc agaaggttgt tgaggttgat gctcttgcta aggcattggc tggtcaaaag 240

gatgaggcta cttcgcagca aatgctgctg ctcaggcctc gaggaaatcc tcaccccgtg 300

<210> 1198
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 1198

ggtgatccag atcgatgagg cagctctaag ggagggtctg ccactacgca agtcagagca 60

tgcattctac ctggactggg ctgtccactc tttcaggatc accaactgcg gagtccagga 120

caccacccag atccacaccc acatgtgcta ctccaacttc aacgacatca tccactccat 180

catcgacatg gatgccgatg tgatcacgat cgagaatccc ggtctgacga gaa 233

<210> 1199
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 1199

gggaacgacc agccgaggtt tgagacttgc taccagatcg ctcttgcgat caagaaggaa 60

gtcgaggatt cttggaggct ggtggtattc aggttatcca aatcgacgag gctgcactga 120

gagaagggct gccgctccgc aaggctgagc atgcattcta cttggactgg gctgtccact 180

ccttcagaat taccaactgc gagatccagg acaccaccca gatccacacc cacatgtgct 240

actccaactt caacgа 256

<210> 1200
<211> 297
<212> nucleic acid

<213> Zea mays

<400> 1200

gtgagggtgt gaagtacgga gctgggcatt ggccctggtg tctacgacat ccactctcct 60

aggattccct ccaccgagga gatcgcagac cgcgtcgaga agatgctcgc cgtgctcgac 120

accaacatcc tctgggtgaa ccctgactgt ggtctcaaga cacgcaagta cacggaggtc 180

aagcccgccc tgaccaacat ggtctcggcc accaagctca tccgcaccca gcttgccagc 240

gcgaaatgag tcgtttgata gctccatggt ctgatagcgc ggaatgagcc agtttgt 297

<210> 1201
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1201

cacctatcat cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc 60

acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt 120

tctgggatgg gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca 180

gtatctggaa gcagatggct gatgctggga tcaagtacat ccccagcaac ancttctcgt 240

actatgacca ggtcttgaca 260

<210> 1202
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1202

gttccgcgag ggcgtcaagt acggcgcggg catcggcccc ggtgtctacg acatccactc 60

ccccaggatc ccgtcggctg aggagatcgc cgaccgcatc gacaagatgc tggcggtgct 120

ggacaccaac atcctctggg tgaaccccga ctgcggcctc aagacncgca agacccacgg 180

aggtcaagcc cnccctgacn aacatggtct ccgccgctaa gctcatncgc acccagntcg 240

ccagcgccaa gtgagcactt t 261

<210> 1203
<211> 246
<212> nucleic acid

<213> Zea mays

<400> 1203

cccttgccaa ggctttggca ggccaaaagg atgaggtcta ctttgcagcc aatgctgctg 60

ctnnggcctc aaggagatca tcgcccaggg tgacaaacga ggaggtccag aaggctgcag 120

ctgctttgag gggatctgac caccgccgtt ctaccactgt ttctgctaga ttggatgctc 180

agcagaaaaa gctcaacctt cctgtccttc ccacaaccac aattggttca ttccctcaga 240

ctgtgg 246

<210> 1204
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1204

gggacntggt ccagtggtga ncgcggacgt gatcaccatt ganaactcgc ggtccgaagn 60

gaagctgctc tccgtgttcc gcnagggcgt caagtacggc gcgggcatcg gccccggtgt 120

ctacgacatc cactccccca ggatcccgtc ggctgaggat atcgccgacc gcatcgacaa 180

gatgctggcg gtgctggaca ccaacatcct ctgggtgaac cccgactgcg gcctcaagac 240

ccncaagtac acggaggtcn agcccg 266

<210> 1205
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1205

ccccaacccc atgaccgttt tcnggtcgaa gacggcacag agcatgacgt ctcgcccaat 60

gaaggggatg ctgactggcc cagtcacaat cctcaactgg tccttcgtcc ggaatgacca 120

gccgangttt gagacttgct accagatcgc tcttgcgatc aagaaggaag tcgaggatct 180

tgagtntggt ggtattcagg ttatccaaat cgacgaggct gcactgagan aagggcnnnn 240

cgctccgcaa ggctgagcat gcattctaat tgganggntc atccttcaga ttacactgng 300

ag 302

<210> 1206

<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1206

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caaccccatg accgttttct ggtcgaagac ggcgcagagc atgacgtctc gcccaatgaa 120

ggggatgctg actggcccag tcacaatcct caactggtcc ttcgtccgga atgaccagcc 180

gaggtttgag acttgctacc agatcgctct tgcgatcaag aaggaatcga ggactcgagg 240

ctggtggtat cagttaccaa ncgagagtgc ntgagagaag gtgcgtcgca gntgacnnat 300

ctattgatgg tgtcatctc 319

<210> 1207
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1207

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tggtgttgtg gatggacgca acatctgggc tgatgatctt gctacatctc tcagcantct 120

ccagtctctt gaggctgttg ttgggaagga caagcttgtc gtatcaactt cctgctcgct 180

catgcacacc gctgtggatc ttgtgaacga gactaagctt gacagcgaga ttaagtcttg 240

gcttgctttt gctgcccaga angttgttga gttgatgtct tgctaaaggc attgctggt 299

<210> 1208
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1208

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antncttggc ctgntttgct gcccagaagg ttgttgaggt tgatgctctt gctaaggcat 120

tggctggtca aaaggatgag gcttacttcg cagcaaatgc tgcngtcagg cctcgaggaa 180

atcctcaccc cgtgtgacca atgaagaagt ccagaaggct gntgctgctc tcaaggggctc 240

tgaccaccgc cgtgggacca acgttagtgc tagatggatg cccagcngtn agnagcttaa 300

cctccccanc cttcc 315

<210> 1209
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1209

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accgntgtgg atcttgtgaa cgagactaat cttgacagcg agattaagtc ttggcttgct 120

tttgctgccc agaaggttgt tgaggttgat gctcttgcta aggcattggc tggtcaaaag 180

gatgaggctt acttcgcagc aaatgctgct gctcaggcct cgaggaaatc tcaccccgtn 240

tgaccaatga anaantccan aaggctgctg ctgctctcaa gggctctgac caccggcgtn 300

ggaccaacgt tagtgctaga ttggatgccc acaaangaaa cttaacctcc cattcttcca 360

ccacttcaat tggttcgttn ccacaaaccc gttgagctca agaaggtccg ccgtgagtac 420

a 421

<210> 1210
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1210

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cgaccgcatc gacaagatgc tggccgtgct ggacaccaac atcctctggg tgaaccccga 120

ctgcggcctc aagacccgca agtacacgga ggtcaagccc gccctgacca acatggtctc 180

cgctgctaag ctcattcgca cccagctcgc cagcgccaag tgagcacctt tttttgcctt 240

tttcgtttcc gaggagggcg t 261

<210> 1211
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 1211

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gtgaacgaga ctaagcttga cagcgagatt aagtcttggc ttgcttttgc tgcccagaag 120

gttgttgagg ttgatgctct tgctaaggca ttggctggtc aaaaggatga ggcttacttc 180

gcagcaaatg ctgctgctca ggcctcgagg aaatcctcac cccgtgtgac caatgaaga 239

<210> 1212
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 1212

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ggataccctc gcatgggccc caagagggag ctcaagtttg cacttgagtc tttctgggat 120

gggaagagca ccgctgagga tctggagaag gttgctaccg acctcagggc cagtatctgg 180

aagcagatgg ctgatgctgg gatcaagtac atccccagca acactttctc gtacta 236

<210> 1213
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1213

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gttccaaagg aaagatggcg tcccatattg ttggataccc tcgcatgggc cccaagagag 120

agctcaagtt tgccttggag tctttctggg atgggaagag cagcgccgat gatttagaga 180

aagttgcctc tgacctcagg tctagcatct ggaagcaaat gtcagaagct gggatcaagt 240

acattcccag caacaccttc tcgtactatg accagg 276

<210> 1214
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 1214

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tctggtcgaa gacggcgcag agcatgacgt ctcgcccaat gaaggggatg ctgantggcc 120

cagtcacaat cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gaganttgcn 180

ancagatcgc tctttgcgatc aagaaggaag tngaggatct cgangctagt g 231

<210> 1215
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1215

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ttgaatctgt actttctgga ttgaatgtgc ttgttgagac ttactttgct gatgttcctg 120

ctgagtccta caagacccta acatctctga gcagtgtgac tgcttatggt tttgatcttg 180

tccgtggaac ccaaactctt gggcttgtca cgagtgctgg tttccctgct ggaaagtacc 240

tctttgctgg tgttgtggat ggacgcaaca tctgggctga tgat 284

<210> 1216
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1216

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tgttgtggat ggacgcaaca tctgggctga tgatcttgct acatctctca gcactctcca 120

gtctcttgag gctgttgttg ggaaggacaa gcttgtcgta tcaacttcct gctcgctcat 180

gcacaccgct gtggatcttg tgaacgagac taagcttgac agcgagatta agtcttggct 240

gcttttgctg cccagaaggt tgttgaggtt gatgctcttg 280

<210> 1217
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1217

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tcatggactg gaggagagat tgggtttgac acctacttct ccatggccag gggcaacgcc 120

actgtccctg ctatggagat gaccaagtgg tttgacacca actaccactt tattgtccct 180

gaattgggcc caaacaccaa gttctcctat gcttctcaca aggctgttaa cgaatataag 240

gaggctaggc gctcggtgtt gatacgtgcc agtattgntg gac 283

<210> 1218
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 1218

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ctgagttnaa ggcagctggg gcttcatgga ttcagtttga tgagcccact cttgncctcg 120

ancttgattc tgacaaattg gctgcattct ctgctgcata cgcagaactt gaatctgtac 180

tttctggatt gaatgtgctt gttgagactt actttgctga tgntcctgct gantcctaca 240

agaccctaac atctctgagc agtgtgactg cttatggttt tgatctgtcc gtngaaccca 300

aaccttgggc ttgtcacgag tgctggntcc ctgctgg 337

<210> 1219
<211> 446
<212> nucleic acid
<213> Zea mays

<400> 1219

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agatcgcgga ccgcgtcaac aagatgctcg ccgtgctgga caccaacatc ctctgggtga 120

accctgactg cggtctcaag acacgcaagt acacggaggt gaagcctgcc ctgaccaaca 180

tggtctccgc caccaagctc atccgcaccc agctcggcag cgcgaaatga gtcagatttg 240

gtagatccat ggtttgttga acacaaaagc cagcagggtc atttgtttcg aataatttgg 300

gtccttactc ctgttccatg gcgttaggtt aagcctcatt ggtgttggtg gggtaccggc 360

gttacgtgtc cgtgttctaa agtttggaat gtgtgtttct ctttttggt nggggtttgn 420

gtgcctttgg gtatataaac agaaat 446

<210> 1220
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 1220

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tgtcaagntc caagaggagc ttgacnttga tgtgcttgtg catggagagc cagaaagaan 120

tgacatggtt gagtacttcg gtgagcantt atctggtttt gcantcactg ccaacggntg 180

ggtgcnatct ttatggatca cgttgtgtga agccaccntt atctatgg 228

<210> 1221
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1221

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gcgagattaa gtcttggctt gcttttgctg cccagaaggt tgttgaggtt gatgctcttg 120

ctaaggcatt ggctggtcaa aaggatgagg cttacttcgc agcaaatgct gctgctcagg 180

cctcgaggaa atcctcaccc cgtgtgacca atgaagaagt ccagaaggct gc 232

<210> 1222
<211> 217
<212> nucleic acid
<213> Zea mays

<400> 1222

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gtctgccact gcgcaagtca gagcatgcat tctacctgga ctgggctgtc cactctttca 120

gaatcacnaa ctgcggagtc caggacacca cccagatcca nacccatatg tgctactcca 180

acttcaacga catcatccac tccatcatcg acatgga 217

<210> 1223
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1223

ggcgctcggt gttgataccg tgccagtact tgttggacca gtctcgtacc tgttgctctc 60

aaagcccgcc aagggtgtgg agaagggatt ccctcttctt tcccttctta gcagcatcct 120

cccagtctac aaggaggtca ttgctgagtt gaaggcagct ggggcttcat ggattcagtt 180

tgatgagccc actcttgtcc tcgaccttga ttctgacaaa ttggctgcat tctctgctgc 240

atacgcagaa cttgaatctg tattntgant tnatggg 277

<210> 1224
<211> 206
<212> nucleic acid
<213> Zea mays

<400> 1224

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aagatccaag aggagcttga cattgatgtg cttgtgcatg gagagccaga gagaaatgac 120

atggttgagt acttcggtga gcaattatct ggttttgcgt tcactgccaa cggatgggtg 180

caatcctatg gntcacgctg tgtgac 206

<210> 1225
<211> 354
<212> nucleic acid
<213> Zea mays

<400> 1225

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tgcagtctta tgggtcaagg tgngtcaagc ctgccgattc atctactgna acgtgtatgc 120

cgccaccaac nccatgaccg ttttctggtc gnnnacggcg cagagcatga cgtctcgccc 180

aatgaatggg atgntgactn gcncagtcac antcctcaac tngtcctncg tcggaatgac 240

cagccgaggt ntganacttg ctaccagatc gctctngcga tnaagnnggn agtcgaggtc 300

tcgacgtggn gtatcaggtg accaantcga cnagctgcat gagagagagc gcgc 354

<210> 1226
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 1226

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cgtcaagcct ccgatcatct acggtgacgt gagccgcccc aaccccatga ccgttttctg 120

gtcgaagagg cgcagagcat gacgtctcgc ccaatgaagg ggatgctgac tggcccagtc 180

acaatcctca actggtcctt cgtccggaat naccagccga ggttttat 228

<210> 1227
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1227

cgnacntggg tntncgtcag gaacgaccag cctaggtttg agacatgcta ccaaatagct 60

cttgcaatca aaaaggaggt tgaggatctt gangctgctg gtaantcagg tgatccagat 120

cgatgaggca gctctaaggg agggtctgcc actacgcaag tcagagcatg cattctacct 180

ggactgggct gtccactctt tcaggatcac caactgcgga gtccaggaca ccacccagat 240

ccacacccac atgtgctact 260

<210> 1228
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1228

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tcatggactg gaggagagat tgggtttgac acctacttct ccatggccag gggcaacgcc 120

actgtccctg ctatggagat gaccaagtgg tttgacacca actaccactt tattgtccct 180

gaattgggcc caaacaccaa gttctcctat gcttctcana aggctgttaa ngaatataag 240

aggctaaggc gctcggtgtt aanaccggcc aatant 276

<210> 1229
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 1229

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ggattccctc ttctttccct tcttagcagc atcctcccag tctacaagga ggtcattgct 120

gagttgaagg cagctggggc ttcatggatt cagtttgatg agcccactct tgtcctcgac 180

cttgattctg acaaattggc tgcattctct gctgcatacg cagaacttga atctgtactt 240

tctggattga atgtgc 256

<210> 1230
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1230

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ttctggtcga agaggcacag agcatgacgt ctcgcccaat gaaggggatg ctgactggcc 120

cagtcacaat cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gagacttgct 180

accagatcgc tcttgcgatc aagaaggaag tcgaggatct tgaggctggt ggtattcagg 240

ttatccaaat cgacgag 257

<210> 1231
<211> 344
<212> nucleic acid
<213> Zea mays

<400> 1231

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tgagttgaag gcagctgggg cttcatggat tcagtttgat gagcccactc ttgtcctcga 120

ccttgattct gacaaattgg ctgcattctc tgctgcatac gcagaacttg aatctgtact 180

ttctggattg aatgtgcttg ttgagactta ctttgctgat gttcctgctg agtcctacaa 240

gaccctaaca tccctgagca gtgtgactgc ttatggtttg acttgtccgt ggaacccaaa 300

ctcttgggtt gtcacgagtg ctggtttccc tgctggaagt actc 344

<210> 1232
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1232

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agtctttctg ggatgggaag annaccgctg aggatctgga gaaggttgct accgacctca 120

gggccagtat ctggaagcag atggnngatg ctggggatca agtacatccc cagcaacact 180

ttctcgtact atgaccaggt ccttgacacc actgccatgc tcggcgctgt ccccgaacgt 240

tactcatgga ctggaggaga gattggattt gacactac 278

<210> 1233
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 1233

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agattaagtc ttggcttgct tttgctgccc agaaggttgt tgaggttgat gctcttgcta 120

aggcattggc tggtcaaaag gatgaggctt actcgcagca aatgctgcag ctcaggcctc 180

gaggaaatcc tcaccccgtg tgaccaatga agaagtccag aaggctgctg ctgctctcaa 240

gggctctga 249

<210> 1234
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1234

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ccacgttcca aaggantgct ggcgtcccat attgttggat accntcgcat gggccccaag 120

agagagctca agtttgcctt ggagtctttc tgggatggga agagcagcgc cgatgattta 180

gagaaagttg cctctgacct caggtctagc atctggacng ccnatgtcag angctgggnt 240

cnagtacatt cccagcaaca ccttctcgta ctatgaccag gtccttgata ccagg 295

<210> 1235
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1235

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ctggtgttgt ggatggacgc aacatctggg ctgatgatct tgctacatct ctcagcactc 120

tccagtctct tgaggctgtt gttgggaagg acaagcttgt cgtatcaact tcctgctcgc 180

tnntgcacac cgctgtggat cttgtgaacg agactaagct tgacagcgag attaagtctg 240

gctgcttttg ctgcccagaa ggttgtt 267

<210> 1236
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1236

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gaccgcgtcg agaagatgct cgccgtgctg gacaccaaca tcctctgggt gaaccctgac 120

tgtggtctca agacacgcaa gtacacggag gtcaagcccg ccctgaccaa catggtctcg 180

gccancaagc tcatccgcac ccagcttgcc aacgcgaaat gagtcgtttg atagctccat 240

ggtttgatag cgcggaatga gccagttgtt ttgaataatt tgggtgntac cc 292

<210> 1237
<211> 217
<212> nucleic acid
<213> Zea mays

<400> 1237

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tgagtacttc ngtgagcagc tctccggttt tgcgttcact gccaatggct gggtgcagtc 120

ttatgggtca aggtncgtca ngcctccgnt catctacggt gacgtgagcc gccccaaccc 180

catgaccgtn ttctggtcgn agactgcgca gagcatg 217

<210> 1238
<211> 456
<212> nucleic acid
<213> Zea mays

<400> 1238

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ngaggntatc gccgaccgca tcgacaagat gctggcggtg ctggacacca acatcctctg 120

ggtgaacccc gactgcggcc tcaagacccg caagtacacg gaggtcaagc ccgccctgac 180

caacatggtc tccgccgcta agctcatccn cacccagctc gccagcgcca agtgagcacc 240

tttttttgc ctttttcgtt tccgaggagg gcgtcgtcna ntgccaattt ggttncaata 300

aacagggctn tgcccgccgt tctgttgtac tccgtctgtg gttaggttag tagttatctt 360

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gttgcccntt tacttgtatn gtaaaaaccc aatngt 456

<210> 1239
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1239

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ataccctcnc atgggcccca agagggagct caagtttgca cttgagtctt tctgggatgg 120

gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca gtatctggaa 180

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tcctgacacc atgccatgtc ggcgctgtcc ccgaaggtac tcatggatg 289

<210> 1240
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1240

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gttgctctca aagcctgcca agggtgtgga gaagggattc cctcttcttt cccttcttag 120

cagcatcctc ccagtctaca aggaggtcat tgctgagttg aaggcagctg ggcttcatg 180

gattcagttt gatgagccca ctcttgtcct ngacctgaat tcggnacaaa tnggctgcat 240

tctcngcngc atangcngaa nttgaatctg tact 274

<210> 1241
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1241

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ggataccctc gcatgggncc cnaganggag ctcaagtttg cacttgagtc tttctgggat 120

gggnagagca acgctgagga tctggagaag gttgctaccg acntcagggc cagtatccgg 180

aagcanatgg cngatnctgg gatcaagtac atccccagca anacnttctc gnantatgac 240

caggtcttga naccatgcca tggctcgg 268

<210> 1242
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1242

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tgctggcggt gctggacacc aacatcctct gggtgaaccc cgactgcggc ctcaagaccc 120

gcaagtacac ggaggtcaag cccgccctga ccaacatggt ctccgccgct aagctcatcc 180

gcacccagct cgccagcgcc aagtgagcac ctttttttg ccttttcgt ttccgaggag 240

ggcgtcgtcg atgccaattt 260

<210> 1243
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1243

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gcatcggccc cggtgtctac gacatccact cccccaggat cccgtcggct gaggagatcg 120

ccgaccgcat cgacaagatg ctggngtgct ggacaccaac atcctctggg tgaaccccga 180

ctgcggcctc aagacccgca agtacacgga ggtcaagccc gccctgacca ncatggtctc 240

ngccggtaag ctnatccgca cccagctcgc naggccaagt 280

<210> 1244
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1244

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aacttgaatc tgtactttct ggattgaatg tgcttgttga gacttacttt gctgatgttc 120

ctgctgagtc ctacaagacc ctaacanctc tgagcagtgt gactgctnat ggttttgatc 180

ttgtccgtgg aacccaaact ctnggggctt gtcacgagtg ctgggtttcc ctgctggaaa 240

gtacctcttt gctggtgttg tggatggacn caacagctgg ggtngatgnt cttncnnacn 300

tcgcc 305

<210> 1245
<211> 198
<212> nucleic acid
<213> Zea mays

<400> 1245

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atganggga tgctgactgg cccagtcaca atcctcaact ggtccttcgt ccggaatgac 120

cagccgaggt ttgagacttg ctaccagatc gctcttgcga tcaagaagga agtcgaggat 180

ctcgaggctg gtggtatt 198

<210> 1246
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1246

ctcccagtct acaaggaggt cattgctgag ttgaaggcag ctggggcttc atggattcag 60

tttgatgagc ccactcttgt cctcgacctt gattctgaca aattggctgc attctctgct 120

gcatacgcag aacttgaatc tgtacttctg gattgaatgt gctgttgaga cttactttgc 180

tgatgttcct gctgagtcct acaagaccct aacatctctg agcagtgtga ctgcctatgg 240

ttttgatctt gtccgtggaa cccaaactct tgggcttgtc acgagtgctg gtttccc 297

<210> 1247
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1247

tccantcgat catnggnatg gacgcggatg tnattcacca ttgagaactc gcggtccgac 60

gagaagctgc tctccgtgtt ccgcgagggc gtcaagtacg gcgcgggcat cggccccggt 120

gtctacgaca tccactcnnc caggatcccg tcggctgagg agatcgccga ccgcatcgac 180

aagatgtgng gtgctggana cnaacatcct ctnggtgaac cccgactgcg gcctcaagan 240

ccgcaagtac acngaggtca aancggnctg accaacangt ctccgt 286

<210> 1248
<211> 343
<212> nucleic acid
<213> Zea mays

<400> 1248

cngtgacgtg agccgcccca accccatgac cgttttctgg tcgaagacgg gcgcagagca 60

tgacgtctca gcccaatgaa nggggnnntg actggccaag tcacaatncc tcaactggtc 120

cttcgtccgg aatgaccagc cgaggtttga gacttgctac cagatcgctc ttgcgatcaa 180

gaaggaagtc gaggatctcg aggctggtgg tattcaggtt atccaaatcg acgaggctgc 240

actgagagaa gggctgccgc tccgcaaggc tgnagcatgc atcttacttg gatgggctgt 300

tccattcctt cagaatcacc aatgcgaatc caggacacca ccc 343

<210> 1249
<211> 210
<212> nucleic acid
<213> Zea mays

<400> 1249

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ggtattcagg tgatccagat cgatgaggca gctctaaggg agggtctgcc actacgcaag 120

tcagagcatg cattctacct ggactgggct gtccactctt tcaggatcac caactgcgga 180

gtccaggaca ccacccagat ccacacccac 210

<210> 1250
<211> 206
<212> nucleic acid
<213> Zea mays

<400> 1250

gcttttgctg cccagaaggt tgttgaggtt gatgctcttg ctaaggcatt ggctggtcaa 60

aaggatgagg cttacttcgc agcaaatgct gcagctcagg cctcgaggaa atcctcaccc 120

cgtgtgacca atgaagaagt ccagaaggct gctgctgctc tcaagggctc tgaccaccgc 180

cgtgcgacca acgttagtgc tagntt 206

<210> 1251
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1251

gaccagccga ggtttgagac ttgctaccag atcgctcttg cgatnaagaa ggaagtcgag 60

gatcttgagg ctggtggtat tcaggttatc caaatcgacg aggctgcact gagagaaggg 120

ntgccgctcc gcaaggctga tcatgcattc tacttggact gggctgtcca ntccttcagn 180

attaccaact gcgagatcca ggacaccacc cagatccaca ccc 223

<210> 1252
<211> 186
<212> nucleic acid
<213> Zea mays

<400> 1252

acaaaccgtt gagctcagga gggtccgccg tgagtacaag gcaaaaaaga tctctgagga 60

ggaatacgtc actgccatca aggaggaaat caacaaggtc gttaagcttc aagaagagct 120

tgacattgat gtgcttgtgc atggcgagcc tgagagaaac gatatggttg agtacttcgg 180

tgagca 186

<210> 1253
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 1253

cnagatggcg tcccatattg ttggataccc tcgcatgggc cccaagaggg agctgcaagt 60

ttgcnttgga gtactttctg ggatgggnag agcagcgccg aggatttgga gaangttgnc 120

actgacctga ggtctagcat ctggnagcaa atgtcagang ctgggatcaa gtacattccc 180

aggcaatcac cttctcgtac tacgaccagg ttcttgatac cacggccatg cttggcgc 238

<210> 1254
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1254

gcccttgcca aggctttggc aggccaaaag gatgaggtct actttgcagc caatgctgct 60

gcttcaggcc tcaaggagat catcgcccag ggtgacaaac gaggaggtcc agaaggctgc 120

agctgctttg aggggatctg accaccgccg ttctaccact gtttctgcta gattggatgc 180

tcagcagaan aagctcaacc ttcctgtcct tcccacaacc acaattggtt cattccctca 240

gactgtggaa tcaggagggt tcgccgtgaa tacaagg 277

<210> 1255
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1255

cctgagacag tcagacgtcc cgtgctcgtc atcaccaccc acatctcagt tcaccccggc 60

gtcgtcctct tcccccggcg ctactctccc gctccacgtt ccaaaggaaa gatggcgtcc 120

catattgttg gataccctcg catgggcccc aagagagagc tcaagtttgc cttggagtct 180

ttctgggatg ggaagagcag cgccgatgat ttagagaaag ttgcctctga cctcaggtct 240

agcatctgga agcaaatgtc agaagctggg atcaagtaca ttcccag 287

<210> 1256
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 1256

gggcccaaac accaagttct cctatgcttc tcacaaggct gttaacgaat ataaggaggc 60

taaggcgctc ggtgttgata ccgtgccagt acttgttgga ccagtctcgt acctgttgct 120

ctcaaagcct gccaagggtg tggagaaggg attccctctt ctttcccttc ttagcagcat 180

cctcccagtc tacaaggagg tcattgctga gttgaaggc 219

<210> 1257

<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1257

gtccggaatg accagccgag gtttgagact tgctaccaga tcgctcttgc gatcaagaag 60

gaagtcgagg atctcgaggc tggtggtatt caggttatcc aaatcgacga ggctgcactg 120

agagaagggc tgccgctccg caaggctgag catgcattct acttggactg ggctgtccac 180

tccttcagaa tcaccaactg cggagatcca ggacaccacc catatccaaa cccanatgtg 240

ctattcnanc ttnaacgaca tcatccact 269

<210> 1258
<211> 213
<212> nucleic acid
<213> Zea mays

<400> 1258

caacttcctg ctcgctcatg cacaccgctg tggatcttgt gaacgagact aagcttgaca 60

gcgagattaa gtcttggctt gcttttgctg cccagaaggt tgttgaggtt gatgctcttg 120

ctaaggcatt ggctggtcaa aaggatgagg cttacttcgc agcaaatgct gctgctcagg 180

cctcgaggaa atcctcaccc cgtgtgacca atg 213

<210> 1259
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1259

atttggttgc cctggccggt acnagtccaa gaattcccgg gtcctcacct atcatcgccg 60

ctgcgccgtc tcctccgctc ccgtcgtccg gaaagatggc gtcccacatt gttggatacc 120

ctcgcatggg ccccaagagg gagctcaagt ttgcacttga gtctttctgg gatgggaaga 180

gcaccgctga ggatctggag aaggttgcta ccgacctcag ggccagtatc tggaagcaga 240

tggctgatgc tgggatcaag tacatcccc 269

<210> 1260
<211> 266
<212> nucleic acid

<213> Zea mays

<400> 1260

catgacgtct cgcccaatga aggggatgct gnctggccca gtcacaatcc tcaactggtc 60

cttcgtccgg aatgaccagc cgaggtttga gacttgctac cagatcgctc ttgcgatcaa 120

gaaggaagtt cgaggatctt naggctggtg gtattcaggt tatccaaatc cgacgaggct 180

gcactgagna gaagggctgc cgctccgcaa ggccgagcat gccatctact tgnactgggc 240

tgtccactcc ttcagattac caactg 266

<210> 1261
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 1261

acggtttngg gcatcggccc cggtgtctac gacatgcact cccccaggat cccgtcggct 60

gaggagatcg ccgaccgcat cgacaagatg ctggcggtgc tggacaccaa catcctctgg 120

gtgaaccccg actgcggcct caagacccgc aagtacacgg aggtcaagcc cgcctgacca 180

acatggtctc cgccgctaag ctcatccgca cccagctcgc cagcgccaag tgagcacctt 240

atntttgcnt ntttngtttc cgaggagggc gtngtcgatg ccaattngng ttcaataaac 300

agggctgtgc ccgcccgttc tgtngactnc gctgtgggtt aagttagtan tttcttngat 360

ctcgcnccca cgcggtacct ggtttactac tctctgtttg gtggttcttg aagcaagtta 420

cnncntgtac ttggatagaa aaa 443

<210> 1262
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 1262

ggcagctggg gcttcatgga ttcagtttga tgagcccact cttgtcctcg accttgattc 60

tgacaaattg gctgcattct ctgctgcata cgcagaactt gaatctgtac tttctggatt 120

gaatgtgctt gttgagactt actttgctga tgttcctgct gagtcctaca agaccctaac 180

atctctgagc agtgtgactg cttatggttt tgatcttgtc cgtggaaccc aaactcttgg 240

gcttgtcacg agtgctgg 258

<210> 1263
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1263

ggcagctggg gcttcatgga ttcagtttga tgagcccact cttgtcctcg accttgattc 60

tgacaaattg gctgcattct ctgctgcata cgcagaactt gaatctgtac tttctggatt 120

gaatgtgctt gttgagactt actttgctga tgttcctgct gagtcctaca agaccctaac 180

atctctgagc agtgtgactg cttatggttt tgatcttgtc cgtggaaccc aaactcttgg 240

gcttgtcacg agtgctggtt tccctgctgg aaagt 275

<210> 1264
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1264

ctacgacatc cactctccta ggattccctc cacagaggag atcncagacc gcgtcgagaa 60

gatgctcgcc gtgctcgaca ccaacatcct ctgggtgaac cctgactgtg gtctcaagac 120

acgcaagtac acggaggtca agcccgccct gaccaacatg gtctcggcca ccaagctcgc 180

ncgcacccag cttgccagcg cgaaatgagg tcgtttgata gctccatggt ctgatagcgc 240

ggaatgagcc agt 253

<210> 1265
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 1265

ggctgctgct ctcaagggct ctgaccaccg ccgtgggacc aacgttagtg ctagattgga 60

tgcccagcag aagaagctta acctccccat ccttcccacc actacaatcg gttcgttccc 120

acaaaccgtt gagctcagga gggtccgccg tgagtacaag gcaaaaaaga tctctgagga 180

agaatacgtc actggccatc naggaggaaa t 211

<210> 1266
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1266

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gaccttgatt ctgacaaatt ggctgcattc tctgctgcat acgcagaact tgaatctgta 120

ctttctggat tgaatgtgct gttgagactt actttgctga tgttcctgct gagtcctaca 180

agaccctaac atctctgagc agtgtgactg cctatggttt tgatcttgtc cgtggaaccc 240

aaactcttgg gcttgtcacg agtgctggtt tccctgctgg aaagtactct tgctggt 297

<210> 1267
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1267

atccctgagc agtgtgactg cttatggttt tgatcttgtc cgtggaaccc aaactcttgg 60

gcttgtcacg agtgctggtt tccctgctgg aaagtacctc tttgctggtg ttgtggatgg 120

acgcaacatc tgggctgatg atcttgctac atctctcagc actctccagt ctcttgaggc 180

tgttgttggg aaggacaagc ttgtcgtatc aacttcctgc tcgctcatgc acaccgctgt 240

ggatcttgtg aacgagacta agcttga 267

<210> 1268
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 1268

ccgctgcgcc gtctccnccg cncccgtcgt ccggancnga tggcgtccca cattgttgga 60

tacnctcgca tggnccccaa nagggagctc aagtttgcac ttnagtcttt cngggatngg 120

aagancacng ctgaggatcn cgagaaggtn gcnaccgacc tcagggccag tatctggaag 180

cagatngctg annctgggat caantacatn cccagcaaca cttt 224

<210> 1269

<211> 212
<212> nucleic acid
<213> Zea mays

<400> 1269

nnnnnnnnnn nnnnnngaca tggacgcgga cgtgatcacc atcgagaact cgcggtccga 60

cgagaagctg ctctccgtgt tccgtgaggg tgtcaagtac ggcgcgggca tcggccccgg 120

tgtctacgac atccactccc ccaggatccc gtcggccgag gagatcgccg accgcatcga 180

caagatgctg gccgtgctgg acaccaacat ca 212

<210> 1270
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1270

cgagangctg ctctccgtgt tcngcgnggg cgtcaagtac ggngcgggcn tcggcctcgg 60

tgtctacgac atcnnctccc ccaggntncc gtcngctgng gagatcgccg accgcatcga 120

caagatgctg gcggtgctgg acaccaacat cctctgggtg aaccccgact cggcctcaag 180

acccgcaagt acacggnggt caagcccgcc ctgaccaaca tggtntcgcc gctnagtcat 240

ccgacccagc tcgnnagccg cgangtgagc actttttttgc cttttcgttc cg 292

<210> 1271
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1271

angcaacatc tgggctgatg atcttgctac atctctcagc actctccagt ctcttgaggc 60

tgttgttggg aaggacaagc ttgtcgtatc aacttcctgc tcgctcatgc acaccgctgt 120

ggatcttgtg aacgagacta agcttgacag cgagattaag tcttggcttg cttttgctgc 180

ccagaaggtt gttgaggtga tgctcntgct aaggcattgg ctggtcaaaa ggatgaggnt 240

acttcgcagc aaatgcngca gctcaggncn cgaggaaatc ctcaccc 287

<210> 1272
<211> 265
<212> nucleic acid

<213> Zea mays

<400> 1272

tcaccaccca catctcagtt caccccggcg tcgtcctctt cccccggcgc tactctccng 60

ctccacgttc caaaggaaag atggcgtacn catattgntg gataccctcg catgggcccc 120

aagagagagc tcaagtttgc cttggagtct ttctgggatg ggaagagcag cgccgatgat 180

ttagagaaag ttgcctctga cctcaggtct agcatctgga agcanatgtc agaagctggg 240

atcaagtaca ttcccagcaa cacct 265

<210> 1273
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1273

tagcagcatc ctcccagtct acaaggaggt cattgctgag ttgaaggcag ctggggcttc 60

atggattcag tttgatgagc ccactcttgt cctcgacctt gattctgaca aattggctgc 120

attctctgct gcatacgcag aacttgaatc tgtactttct ggattgaatg tgcttgttga 180

gacttacttt gctgatgttc ctgctgagtc ctacaagacc cta 223

<210> 1274
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1274

ctgggatggg aagagcaccg ctgaggatct ggagaaggtt gctaccgacc tacagggcca 60

gtatctggaa gcagatggct gangctggga tcaagtacat ccccagcaac actttctcgt 120

actatgacca ggtccttgac accactgcca tgctcggcgc tgtccccgaa cgttactaca 180

tggactggag gagagattgg atttgacacc tacttctcca tggccagggg caagccactg 240

ttcctgctat ggagatgacc a 261

<210> 1275
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1275

tggtgttgtg gatggacgca acatctgggc tgatgatctt gctacatctc tcagcantnt 60

ccaggctnnt gagngctgtt gttgggaatg acaagcttgt cgtatcaact tcctgctcgc 120

tcatgcacac cgctgtggat cttgtgaacg agactaagct tgacagcgag attaagtctt 180

ggcttgcttt tgctgcccag aaggttgttg aggttgatgc nctgctaagg catggctggt 240

caaaaggatg aggcttactt cgcagcaaat gctgcagctc agg 283

<210> 1276
<211> 185
<212> nucleic acid
<213> Zea mays

<400> 1276

gcgtcccaca ttgttggata cccnacgcat gggccccaag agggagctac aagtttgcac 60

ttgagtcttn ctgggatggg aagagcaccg ctgaggatct ggagaaggtt gctaccgacc 120

tcagggccag tatctggnag cagatggctg atgctgggat caagtacatc cccagcaaca 180

ctttc 185

<210> 1277
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1277

tcagtttgat gagcccactc ttgtcctcga ccttgattct gacanattgg ctgcaanctc 60

tgctgcatac gcagaacttg aatctgtact ttctggattg aatgtgcttg ttgagactta 120

ctttgctgat gttcctgctg agtcctacaa gaccctaaca tccctgagca gtgtgactgc 180

ttatggtttt gatcttgtcc gtggaaccca aactcttggg cttgtcacga gtgctggttt 240

ccctgctgga aagtactctt tgctggtgtt gtggatga 278

<210> 1278
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1278

ccaggatccc gtcggccgag gagatcgccg accgcatcga caagatgctg gccgtgctgg 60

acaccaacat cctctgggtg aaccccgact gcggcctcaa gacccgcaag tacacggagg 120

tcaagcccgc cctgacaaaa atggtccccg ctganaagct cattcgcacc cagctcgcca 180

gcgccaagtg agcacctttt tttgcctttt tcgtttccga ggagggcgtc gtcgatgcca 240

tttgtttcca ataaacaggg ctcccccct gtgccg 276

<210> 1279
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1279

ggggcttcat ggattcagtt tgatgagccc actcttgtcc tcgaccttga ttctgacaaa 60

ttggctgcat tctctgctgc atacgcagaa cttgaatctg tactttctgg attgaatgtg 120

cttgttgaga cttactttgc tgatgttcct gctgagtcct acaagaccct aacatccctg 180

agcagtgtga ctgcttatgg ttttgatctt gtccgtggaa cccaaactct tgggcttgtc 240

acgagtgctg gtttccctgc tggaaag 267

<210> 1280
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1280

ctccatgacc gttttctggt cgaagacggc gcagagcatg acgtctcgcc caatgaaggg 60

gatgctgact ggcccagtca caatcctcaa ctggtcttcg tccggaatga ccagccgagg 120

tttganactt gctaccagat cgctcttgcg atcaagaagg aagtcgagga tctcgaggct 180

ggtggtatca gttatccaaa tcgacgaggc tgcatgagag aagggtgccg ctccgcaagg 240

ctgagcatgc attctattgg actgggtgtc a 271

<210> 1281
<211> 188
<212> nucleic acid
<213> Zea mays

<400> 1281

gctggtttcc ctgctggaaa gtacctcttt gctggtgttg tggatggacg caacatctgg 60

gctgatgatc ttgctacatc tctcagcact ctccagtctc ttgaggctgt tgttgggaag 120

gacaagcttg tcgtatcaac ttcctgctcg ctcatgcaca ccgctgtgga tcttgtgaac 180

gagactaa 188

<210> 1282
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1282

gtcgaagagg gcgcagagca tgacgtctcg cccaatgaag ggatgctga ctggcncagt 60

cacaatcctc aactggtcct tcgtccggaa tgaccagccg aggtttgaga cttgctacca 120

gatcgctctt gcgatcaaga aggaagtcga ggatctcgag gctggtggta ttcaggttat 180

ccaanttcga cgaggctgca ctgagagaag ggctgccgct ccgnaggntn agnatgattc 240

naantgggan nggggcggcc nntcttnnag aatgnnaggn ggng 284

<210> 1283
<211> 194
<212> nucleic acid
<213> Zea mays

<400> 1283

cacaaccaca attggtncat tccctcagac tgtggaactc aggagggttc gccgtgaata 60

caaggcaaaa agatcaccga ggacgatacn tcagtgccat caaggaanaa tcagcaaggt 120

tgtcaagatc caagaggagc ttgacattga tgtgcttgtg catggagagc cagagagana 180

tgacatggtt gagt 194

<210> 1284
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1284

cggtgttgat accgtgccag tacttgttgg accagtctcg tacctgttgc tctcaaagcc 60

cgccaagggt gtggagaagg gattccctct tctttccctt cttagcagca tcctcccagt 120

ctaaaggagg tcattgctga gttgaaggca gctggggctt catggattca gtttgatgag 180

cccatcttgt cctcgacctt gattctgaca aattggctgc attctctgct gcatacgcag 240

aacttgaatc tgtatttctg gattgaatgt g 271

<210> 1285
<211> 209
<212> nucleic acid
<213> Zea mays

<400> 1285

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ctggtcgaag acgggcacag agcatgacgt ctcgcccaat gaaagggang ctgactggcc 120

cagtcacaat cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gagacttgta 180

ccagatcgct cttgcgtcaa gaaggaagt 209

<210> 1286
<211> 180
<212> nucleic acid
<213> Zea mays

<400> 1286

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actggtcctt cgtccggaat gaccagccga ggtttgagac ttgctaccag atcgctcttg 120

cgatcaagac ggaantcgag gntctcnagg ctngtggtat tcaggttatc caaatcgacg 180

<210> 1287
<211> 200
<212> nucleic acid
<213> Zea mays

<400> 1287

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acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt 120

tctgggatgg gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca 180

gtatctggaa gcagatggct 200

<210> 1288

<211> 324
<212> nucleic acid
<213> Zea mays

<400> 1288

aatggcgagc ctgacanaca cgatatggtt gantacttcg gtgagcagct ctccggtttt 60

gcnttcactg ccaatggctg ggtgcagtct tatgggtcaa ggtgcgtcaa gcctccgatc 120

atctacggtg acgtgagccg ccccaacccc atgacgtttt ctggtcgaag acggcgcaga 180

gcatgacgtc tcgcncaatg aaggggatgc tgactggccc agtcacaatc ntcaactggt 240

cttcgtcgga acgaccagcc gaggtttgag attgctacca gatcgctctt gcgatnaaga 300

angaatcgan gatctgaagc tggc 324

<210> 1289
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 1289

aggaaatcct caccccgtgt gnaccaatga agaagtccag aaggctgctg ctgctctcaa 60

gggctctgac caccgccgtg cgaccaacgt tagtgctaga ttggatgccc agcagaagaa 120

gcttaacctc cccatccttc ccaccactac aatcggttcg ttcccacaaa ccgttgagct 180

c 181

<210> 1290
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1290

caccgaggag atcgcagacc gcgtcgagaa gatgctcgcc gtgctcgaca ccaacatcct 60

ctgggtgaac cctgactgtg gtctcaagac acgcaagtac acggaggtca agcccgccct 120

gaccaacatg gtctcggcca ccaagctcat ccgcacccag cttgccagcg cgaaatgagt 180

cgtttgatag ctccatggtc tgatagcgcg gaatgagcca gtttgttttg aataatttgg 240

gtgttacccc ctgttccatg gtgtnagtgt taggt 275

<210> 1291

<211> 202
<212> nucleic acid
<213> Zea mays

<400> 1291

gctgcatacg cagaacttga atctgtactt tctggattga ntgtgcttgt tgagacttac 60

tttgctgatg ttnctgctga gtcctacaag accctaacat ccctgagcag tgtgactgct 120

tatggttttn atcttgtccg tggaacccaa actcttgggc ttgtcacgag tgctggtttc 180

cctgctggaa agtacctctt tg 202

<210> 1292
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 1292

gagctcagga gggtccgccc gtgagtacaa ggcaaaaaag atctctgagg aggaatacgt 60

cactgccatc aaggaggaaa tcaacaaggt cgttaagctc caagaagagc ttgaacattg 120

atgtgcttgt gctggcgagc ctgagagaaa cgatatggtt gagtacttcg gtgagcagct 180

c 181

<210> 1293
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 1293

ccagagcgct actcttggac tggaggcgag attggcttga gcacctactt ctctatggcc 60

aggggaaatg ccactgtccc tgccatggag atgaccaagt ggtttgatac aaactaccac 120

tttattgtcc ctgaacttgg cccaagcacc aagttcacat acgctnctca caaggctgtt 180

tctgagtacn nggnggcaaa ggggtcggcn ttgatncnat tcccatgctg ttggacanng 240

gc 242

<210> 1294
<211> 176
<212> nucleic acid
<213> Zea mays

<400> 1294

acggcgcaga gcatggacgt ctcgcccaat gaaggggatg ctgactggcc cagtcacaat 60

cctcaactgg tccttcgtcc ggaatgacca gccgaggttt gagacttgct accagatngc 120

tcttgcgatg aagaaggaag tcgaggatct cgaggctggt ggtattcagg ttatcc 176

<210> 1295
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 1295

aagggtgtgg agaagggatt ccctcttctt tcccttctta gcagcatcct cccagtctac 60

aaggaggtca ttgctgagtt gaaggcagct ggggcttcat ggattcagtt tgatgagccc 120

actcttgtcc tcgaccttga ttctgacaaa ttggctgcat tctctgctgc atacgcagaa 180

cttgaatctg tactttctgg atgaatgtgc ttgttgagac tactttgc 228

<210> 1296
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1296

ccagttcacc acccacctcc cactcccagt tcaccccgtc gtcctcgngc gccaccactc 60

ctgcgtcccc cggcgctact cccccgctcc acggtccaag gaaagatggc gtcccatatt 120

gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgccttgga gtctttctgg 180

gatgggaaga gcagcgccga ggatttggag aaagttgcca ctgacctgag gtctagcatc 240

tggaagcaaa tgtcagaagt gggatcaagt aattcccagc aatacttctc gtatacgncc 300

aggttttgat ac 312

<210> 1297
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1297

gccaagggtg tggagaaggg attccctctt ctttccctnc tnagcagcat cctcccagtc 60

tacaangagg tcattgctga gttgaaggca gctggggctt tcatggattc agtttngatg 120

agcccactct tgtcctcgac cttgaatnct gaacaaattg gctgcattct ctgctggcnt 180

acgcagaact ngaatctgta ctntctggat tgaatgtgct tgttgagact tactttgctg 240

atgttcctgc tgagtcctac aagaccctaa 270

<210> 1298
<211> 161
<212> nucleic acid
<213> Zea mays

<400> 1298

gggcgcgggg catcggcccc ggtgtctacg acatccactc ccccaggatc ccgtcggccg 60

aggagatcgc cgaccgcatc gacaagatgc tggccgtgct ggacaccaac atcctctggg 120

tgaaccccga ctgcggcctc aagacccgca agtacaggag g 161

<210> 1299
<211> 213
<212> nucleic acid
<213> Zea mays

<400> 1299

tgacagcgag attaagtctt ggantgcttt tgctgnccca gaaggttnnt gaggttgatg 60

ctcttgctaa ggcattggct ggtcaaaagg atgaggctta cttcgcagca aatgctgctg 120

ctcaggcctc gaggaaatcc tcaccccgtg tgaccaatga agaagtccag aaggctgctg 180

ctgtctcaag ggctctgacc accgccgtgg gac 213

<210> 1300
<211> 194
<212> nucleic acid
<213> Zea mays

<400> 1300

cacctatcat cgccgctgcg ccgtctcctc cgctcccgtc gtccggaaag atggcgtccc 60

acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca cttgagtctt 120

tctgggatgg gaagagcacc gctgaggatc tggagaaggt tgctaccgac ctcagggcca 180

gtatctggaa gaaa 194

<210> 1301
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1301

ctgagcagtg tgactgctta tggttntgat cnngtccgtg gaacccaaac tcttgggctt 60

gtcacgagtg ctggtttccc tgctggaaag tacctctnng ctggtgttgt ggatggacgc 120

aacatctggg ctgatgatct tgctacatct ctcagcactc tccagtctct tgaggctgtt 180

gttgggaagg acaagcttgt cgtatcaact tcctgctcgc tcatgcacac cgctgtggga 240

gctgtggaac cgagantagc ttganaangg ggttaagtnt nggcttgntn t 291

<210> 1302
<211> 152
<212> nucleic acid
<213> Zea mays

<400> 1302

tgatgtgctt gtgcatggcg agcctgagag aaacgatatg gttgagtact tcggtgagca 60

gctctccggt tttgcgttca ctgccaatgg ctgggtgcag tcttatgggt caaggtgcgt 120

caagcctccg atcatctacg gtgacgtgag cc 152

<210> 1303
<211> 152
<212> nucleic acid
<213> Zea mays

<400> 1303

ggngctgtcc actccttcag aattaccaac tgcgagancc aggacaccac ccagatccan 60

ncccacatgt gctactccaa cttcaacgac atcatccact cgatcatcga catggacgcg 120

gacgtgatca ccatngagaa ctcgngggnc gg 152

<210> 1304
<211> 468
<212> nucleic acid
<213> Zea mays

<400> 1304

anaacaacnc tctctttnta ataccngtnc caatacttgt tggaccaatc tcntacctgg 60

ngggggnaaa acctancaag ggtgnggaaa aagnattccc tcttctttcc cttcttaaca 120

gcatcctccc antctacaag gaggtcattg ctganttnaa ngcanctggg gcttnatgga 180

ttcagtttga tganccccact cttgtcctcg accttgattc tgacaaattg gctgcattct 240

cttgctgcat atgcanaact tgaatctgta ctttcttgga ttnaatgtgc ttgttnagac 300

ttactttgct tatgttcctg ctgaantcct acaaaaaccc taacatccct taaacanngt 360

gaactgctta ttggttttta atcttttccc gnggaaccca aaactnttgg gcttntcacn 420

aatgctttgg ttttccttgc ttgaaaaaan cnnnctttgt tggggtgg 468

<210> 1305
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1305

ctggtgttgt ggatggacgc aacatctggg gctgatgatc ttgctacatc tctcagcact 60

ctccagtctc ttgaggctgt tgttgggaag gacaagcttg tccgtatcaa cttcctgctc 120

gctcatgcac accgctgtgg atcttgtgaa cgagactaag cttgacagcg agattaagtc 180

ttggctgctt ttgctgccca gaaggttgtt gaggttgatg ctctcgctaa ggcattggct 240

ggtcaaaagg atgaggctta cttcgcagca aatgctgctg ctcaggcctc ga 292

<210> 1306
<211> 414
<212> nucleic acid
<213> Zea mays

<400> 1306

acngcgcggg catnggcccc ggtgtctacg acatnnactn ccccaggatc ccgtcggctg 60

aaggagatcg ccgaccgcat tgacaagatg ctggcggtgc tggacaccaa catcctctgg 120

gtgaaccccg actgnggnct naaaaacccg caagtacacg gaggtcaaag ccccgncctg 180

accaacatgg tcttccgncc gctaagctca tccgcaccca gctngccagc gccaagtgag 240

cacctttttt ttgccttttt cgtttccgag gaagggcgtn gtcgatgcca atttggtttc 300

aataaacang gctgtgcccg ccggtctggt gnactccgct gngggtaagg taagaagttt 360

cttgancttg ncccangccg gnactggtta ctactntntg gtngnggttc tgag 414

<210> 1307
<211> 163
<212> nucleic acid
<213> Zea mays

<400> 1307

cttcccccgg cgctactctc ccgctccacg ttccaaagga aagatggcgt cccatattgt 60

tggataccct cgcatgggcc ccaagagaga gctcaagttt gccttggagt ctttctggga 120

tgggaagagc agcgccgatg atttagagaa agntgnntcg gac 163

<210> 1308
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 1308

caccagttca ccacccacct cccactccca gttcaccccg tcgtcctcgg cgccaccact 60

cctcgtcccc cggcgctact cccccgctcc acggtccaag gaaagatggc gtcccatatt 120

gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgccttgga gtctttctgg 180

gatgggaaga gcagcgccga ggatttggag aaagttgcca ctgacctgag gtc 233

<210> 1309
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 1309

atcaccagtt caccacccac ctcccactcc cagttcaccc cgtcgtcctc ggcgccacca 60

ctcctcgtcc cccggcgcta ctcccccgct ccacggtcca aggaaagatg gcgtcccata 120

ttgttggata ccctcgcatg ggccccaaga gggagctcaa gtttgccttg gagtctttct 180

gggatgggaa gagcagcgcc gaggatttgg agaaagttgc cactg 225

<210> 1310
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1310

atcatcacca gttcaccacc cacctcccac tcccagttca ccccgtcgtc ctcggcgcca 60

ccactcctcg tcccccggcg ctactccccc gctccacggt ccaaggaaag atggcgtccc 120

atattgttgg ataccctcgc atgggcccca agagggagct caagtttgcc ttggagtctt 180

tctgggatgg gaagagcagc gccgaggatt ggagaaagtt gccatgacct gangttancc 240

attggaagca aatgtcagaa ntgggatcaa gtacatccca gaatacttct cgtatagaca 300

ggt 303

<210> 1311
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1311

gtctacaagg aggtcattgc tgagttgaan gctgggnggn tgctgctaag angggaaaga 60

ngagggaatc ccttcttagc agcatcctcc cagtctacna ggnggtcatt gctgagttga 120

aggcagctgg ggcttcatgg attcagtttg atgagcccac tcttgtccgc gaccttgatt 180

ctgacaaatt ggctgcattc tctgctgcat acgcagaact tgaatctgta ctttctggat 240

tgaatgtgct gttgagacta cttgctgatg ttcctgctga gtcctacaag acc 293

<210> 1312
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1312

ccccaacccc atgaccgttt nctggtcgaa gacggcacag agcatgacgt ctcgcccatg 60

aaggggtgct gactggccca gtcacaatcc ncaactggtc cttcgtccgg aatgaccagc 120

cgaggtttga gacttgctac cagatcgtct tgcgatcaag aaggaagtcg aggatcttga 180

ggttgtgtat tcaggttatc caaatcgaga gctgcatgag agaggggtgc gctccgcaag 240

ctaagcntca tccacttggn nggtttccat tctcggattn cangnagatc aaggnacacc 300

ngntcacanc c 311

<210> 1313

<211> 121
<212> nucleic acid
<213> Zea mays

<400> 1313

gctgcccaga aggttgttga ggttgatgct cttgctaagg cattggctgg tcaaaaggat 60

gaggcttact tcgcagcaaa tgctgctgct caggcctcga ggaaatcctc accccgtgtg 120

a 121

<210> 1314
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 1314

caccagttca ccacccacct cccacnccca gttcaccccg tcgtcctcgg cgccaccact 60

cctcgtcccc cggcgctact cccccgctnc acggtccaag gaaagatggc gtcccatatt 120

gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgccttgga gtctttctgg 180

gaggggaaga gcagtgccga ggattnggag aaattgcnac tg 222

<210> 1315
<211> 190
<212> nucleic acid
<213> Zea mays

<400> 1315

ccttgattct gacaaattgg ctgcatnntc tgntgcatac gcagnacttg aatctgtact 60

tnctggattg aatgtgcncg ttgagactta cttngctgnt gttcctgctg agtccnanaa 120

gaccctaaca ncncngagca gtgtgactgc ntatggtttt gatcttgtcc gtggaaccca 180

nactctnggg 190

<210> 1316
<211> 120
<212> nucleic acid
<213> Zea mays

<400> 1316

gtcccacatt gttggatacc ctcgcatggg ccccaagagg gagctcaagt ttgcacttga 60

gtctttctgg gatgggaaga acaccgctga agatctggag aaggttgcta ccgacctcag 120

<210> 1317
<211> 159
<212> nucleic acid
<213> Zea mays

<400> 1317

gcttacttcg cagcanatgc tnctgctcat ncctcganga natcctcacc ccgtntgacc 60

aatgnagaag tccaaaatgc tgcngntgcn ctcaanggct atgancancg ccgngggacc 120

aacgttagtg ctagattgga tgnccagcag aagaagctt 159

<210> 1318
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1318

cgacaccaac atcctctggg tgaaccctga ctgtggtctc aagacacgca agtacacgga 60

ggtcaagccc gccctgacca acatggtctc ggccaccaag ctcatccgca cccagcttgc 120

cagcgcgaaa tgaggtcgtt tgatagctcc atggtctgat agcgcggaat gagccagttg 180

ttttgaataa tttgggtgtt accccctgtt ccatggtgtt agtgttaggt tagcctctca 240

ttggtgggat acgccgttac aagatgtgtt ctaagtttgg agtgtgtg 288

<210> 1319
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1319

cnagcctnna nagnaacgnt atggttgagt actttcggtg agcagctctc cggttttgcg 60

ttccactgcc aatggctggg tgcagtcnnt atgggtcaag gtgcgtcaag cctccgatca 120

tgctacggtg acgtnagccg cccnaacccc atgaccgttt tctcggtcga agacggcaca 180

gagcatgacc gtctcgccca atgaagggga tgctgactgg cccagtcaca atcctncaac 240

tggtcccttn cgtncggaaa tganccac 268

<210> 1320

<211> 118
<212> nucleic acid
<213> Zea mays

<400> 1320

acgacatcca ctcgcccagg atcccctcca ccgaggagat cgcggaccgc gtcaacaaga 60

tgctcgcngt gctcgacacc aacatcctct gggtgaaccc tgactgcggt ctcaagac 118

<210> 1321
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 1321

gaagcaaatg tcagaagctg ggatcaagta cattcccagc aataccttct cgtactacga 60

ccaggttctt gataccacgg ccatgcttgg cgctgtccca gagcgctact cttggactgg 120

aggtgagatt ggctgagcac tacttctcta t 151

<210> 1322
<211> 436
<212> nucleic acid
<213> Zea mays

<400> 1322

acgacatcca ctctcctagg attccctcca ccgaggagat cgcagaccgc gtcgagaaga 60

tgctcgccgt gctcgacacc aacatcctct gggtgaaccc tgactgtggt ctcaagacac 120

gcaagtcacg gaggtcaagc ccgccctgac caacatggtc tnggccacca agcttattcc 180

gcacccaact tgncagcgcc gaaatgaagt cgtttgatag ctcatggtct gatagcgccg 240

gaatgagcca agtggtttgn ataatttggg tgttaccccc tgntccatgg ngttagtggt 300

aaggtagcct ntnattggtg ggataccccc gttccagant nggtctaagg ttggantggg 360

tggttntctt tnggctatgg ttcttggggt attgtgtgtt ccttgggtat taacnggaat 420

tgaataccca gtcttt 436

<210> 1323
<211> 118
<212> nucleic acid
<213> Zea mays

<400> 1323

tnatcaccat tgagnnctcn cggtccgacn agaagctgct ctccgtnttc cgcnaggncg 60

tcaagtacgn cncgggcatc ngcaccggtn tctacnacat ccactccccc angatccc 118

<210> 1324
<211> 324
<212> nucleic acid
<213> Zea mays

<400> 1324

cgtgttccgc gagggcgtca agtacggcgc gggcatcggc cccggtgtct acgacatcca 60

ctcccccagg atcccgtcgg ctgaggagtc gccgaccgca tcgacaagat gtggcgtgct 120

ggacacaaca tctctgggtg aaccccgact gcggctcaag accgcaatac acgagtcaag 180

cccgcctgac caacatggtc tccgccgcta agtcatccgc accagtcgcc agcgccaagt 240

gagcactttt tttgcttttc gttcgaggag ggtgtgatgc aaattgttcn ataaaanggt 300

gtgccgccgt tctgttgtat cgtt 324

<210> 1325
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1325

ctctgggtga accccgactg cggcctcaag acccgcaagt acacggaggt caagcccgcc 60

ctgaccaaca tggtctccgc cgctaagctc atccgcaccc agctcgccag cgccaagtga 120

gcaccttttt tttgcctttt tcgtttccga ggagggcgtc gtcgatgcca atttgtttcc 180

aataaacagg gctgtgccgc cgttctgttg tactccgtct gtggttaggt tagtagtttt 240

cttgatctcg cccccacgcg gtacctgttt tactactctc tgtttgg 287

<210> 1326
<211> 131
<212> nucleic acid
<213> Zea mays

<400> 1326

gtatgccnag cagaagaagc ttaaccnccc catccttccc accanngaca atcggttcgt 60

tcccanaaan cgttgagctc caggagggtc cgccgtgagt ncaaggcaaa aaagatctct 120

gaggaggaat a 131

<210> 1327
<211> 155
<212> nucleic acid
<213> Zea mays

<400> 1327

gaagagcttg acattgatgt gcttgtgcat ggcgagcctg aganaaacga tatggttgag 60

tacttcggtg agcagctcct ccggttttgc gttcactgcc aatggctggg tgnagtctta 120

tgggtcaang tgcgtcaagc ctccgatcat ctacg 155

<210> 1328
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1328

gacgcgtggg tccacaccta tcatcgccgc tgcgccgtct cctccgctcc cgtcgaccgg 60

aaagatgncg tcccacattg ttggataccc tcgcatgggc cccaagaggg agctcaagtt 120

tgcacttgag tctttctggg atgggaagag caccgtgagg attggagaag gttgtacgac 180

ctcaggcagt attggaacag atgntgatnt ggataagtac atcccacaac actttgtnta 240

tacagtcttg cacatgcant gggt 264

<210> 1329
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1329

aggaggctaa ggngctcggt gttgataccg tgccagtact tgttggacca gtctcgtacc 60

tgttgctctn caaagcccgc caagggtgtg gagaagggat tccctcttcg ttcccttctt 120

agcagcatcc gcccagtgct anaaggaggt cattgctgag ttgaaggcag ctggnggctt 180

catggattca ggttgatgag cccactctng tcctcgnacc tggatgctga caaattgggc 240

tgctttntct gctgcatacg agaantggaa 270

<210> 1330
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1330

ggngtggaga anggattccc tcttctttcc cttctnagca gcatgcntcc cantctanaa 60

ngaggtcant gctgaggtga aggcagctgg ggcttcatgg attcagtttg atgancccac 120

tcttgtcctc gaccttgatt ctgacaaatt ggcctgcatt ctctgctgca tacgcagaac 180

ttgaatctgt actttctgga ttgantgtgc tgtngagann nactttgcng gtgttcctgc 240

tgantctaca agaccntnta tccntggg 268

<210> 1331
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1331

ggtgaacccc gactgcggcc tcannacccg caagtacacg gaggtcaagc ccnccctgac 60

caacatggtc tccgccgcta agctcatccg cacncagctc gccagcgcca agtgagcacc 120

tttttttgc ctttttcgtt tccgaggagg ggtcgtcgat gccaatttgt ttccaataaa 180

cagggctgtg nccgccgttc tgttgtactc cgtctgtggt taggttagta nttttcatga 240

tctcgccnca cgcggtacct gntttactat ctctgtttgg nggttnctga g 291

<210> 1332
<211> 128
<212> nucleic acid
<213> Zea mays

<400> 1332

ctncctcctc acctatcatc gccgctgcgc cgtctcctcc gctcccgtcg nccggaaaga 60

tggccgtccc acattgttgg ataccctcgc atgggcccca agagggagct caagtttgca 120

cttgagtc 128

<210> 1333
<211> 286
<212> nucleic acid

<213> Zea mays

<400> 1333

cacctatcat cgccgctncn ccgtctcctc cgctcccgtc gtncggaaan atggngtccc 60

acattgntgg atancctcgc atgggcccca aganggagct caagtttgca cttgagtctt 120

tctgggatgg gnagagnacc gctgnaggat ctgganaagg ttgctaccga cntcaagggc 180

cagtanctng angccngatg ggntgatgct gggatcaagt acatccncca gcaacaacct 240

tgctctactt atgacaaggt ccttgacaca ctgccatgct cgcggt 286

<210> 1334
<211> 156
<212> nucleic acid
<213> Zea mays

<400> 1334

ctacgacatc cactctctag gattccctcc acagaggaga tcgcagaccg cgtcgagaag 60

atgctcgccg tgctncgaca ccaacatcct ctgggtgaac cctgactgtg gtctcaagac 120

acgcaagtac acggaggtca agcccgccct gaacaa 156

<210> 1335
<211> 185
<212> nucleic acid
<213> Zea mays

<400> 1335

ttnangttga tgctcttgct aaggcattgg ctggtcaaaa ggntgaggct tattcncagc 60

aaatgctgag ctcaggcctc gaggaatcct caccccgtgt gaaccaatgn agaagtccag 120

aaggctgctg ctgctctcaa gggctctgac caccgccgtg naaccaacgt tatgctagat 180

tggat 185

<210> 1336
<211> 139
<212> nucleic acid
<213> Zea mays

<400> 1336

ggaggttgag gatcttgagg ctgctggtat tcaggtgatc cagnttgatg aggcagctct 60

aagggannngt ngccactgcg caagtcccag agcatgcatt ctacctggac tgngctgtcc 120

actctttcag antcaccaa 139

<210> 1337
<211> 114
<212> nucleic acid
<213> Zea mays

<400> 1337

cgaggatctt gaggctggtg gtattcaggt tatccaaatc gacgaggctg cactgagaga 60

agggctgccg ctccgcaagg ctgaacatgc atctaactgg actgggctgt ncca 114

<210> 1338
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 1338

acggaggtca agcccgccct gaccaacatg gtctccgctg ctaagctcat tcgcacccag 60

ctcgccagcg ccaagtgagc accttttttt gcctttttcg tttccgagga gggcgtcgtc 120

gatgccaatt tgtttccaat aaacagggct ccccccctgt gcccgccgtt ctgttgtgct 180

ccgtctgtgg ttaggttact agttttcttg atctcgcccc cacgcggtac ctgttttact 240

atctgtttgg tggt 254

<210> 1339
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1339

cggaggtcaa gcccgccctg accaacatgg tctccgccgc taagctcatc cgcacccagc 60

tcgccagcgc caagtgagca cctttttttt gcctttttcg tttccgagga gggcgtcgtc 120

gatgccaatt tgtttccaat aaacagggct gtgccgccgt tctgttgtac tccgtctgtg 180

gttaggttag tagttttctt gatctcgccc ccacgcggta cctgttttac tactctctgt 240

ttggtggttt ctgaggaagt tgcccgtgta ttgtatcgta aaaaccgag 289

<210> 1340

<211> 252
<212> nucleic acid
<213> Zea mays

<400> 1340

cccgactgcg gcctacaaga cccgcaanta cacggaggtc aagcccgccc tgaccaacat 60

ggtctccgcn gctaagctca tcngcacnca gctcgccagc gccaagtgng cacctttttt 120

ttgccttttt cgtttccgan gagggcntcg tngatgccaa tttgtttcna ntaancaggg 180

ntgtnccagc cgttctgttg nactccgtct gtggttaggt tagtagtttt cttgatctcg 240

cccccaagcg nt 252

<210> 1341
<211> 79
<212> nucleic acid
<213> Zea mays

<400> 1341

ctgcggagtc caggacacca cccagatcca nacccacatg tgtacnccaa cttcaacgac 60

ntcntcnant ccatnanng 79

<210> 1342
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1342

cggaggtcaa gcccgccctg accaacatgg tctccgctgn taagctcatt cgcacccagc 60

tcgncagcgc caagtgagca cctttttttg ccttttttcgt ttccgaggag ggcgtcgtcg 120

atgccaattt gtttccaata aacagggctc cccccctgtg cccgcngttc tgttgtgctc 180

cgtctgtggt taggttacta gttttcttga tctcgccccc acgcggtacc tgttttacta 240

tctgtttggt ggtttctgag 260

<210> 1343
<211> 124
<212> nucleic acid
<213> Zea mays

<400> 1343

caagggctct gcaccaccgc cgtgcgacca acgttagtgc tagattggat gcccagcaga 60

agangttaac ctccccatcc ttcccaccan tacaatcggg ttcgttccca caaaccgttn 120

agct 124

<210> 1344
<211> 505
<212> nucleic acid
<213> Zea mays

<400> 1344

agnttggtnn aggggggng atnnaaaggc natctcgtac cggtccggaa ttcccgggtc 60

gacccacgcg tccggctgaa ctagagtcgg cattctctgg attgaatgtg cttattgaga 120

catactntgc ngacattcct gctgagtcct acaagaccct cacgtcattg agtggtgtga 180

ctgcttacgg ttttgatctt atccgtggag ccaagaccct tgatcttatc aggagcagct 240

tcccctctgg gaagtacctc ttcgctggtg ttgtggatgg acgcaacatt tgggctgatg 300

atcttgctgc atctcttagc actcttcagt ctcttgaggc cgttgctggc aaggacaaac 360

ttgtggtgtc aacctcctgc tcactgatgc acaccgccgt gatcttgtaa atgagactaa 420

actggatgaa tgaagattaa gtcatggctt gcatttgctg cccaaaaggt tgtcgaggtt 480

aatgcccttg cgaagctttg gcaag 505

<210> 1345
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1345

aaacttgtgg tgtcaacntc ctgctcactg atgcanaccg ctgttgacct tgtaaatgag 60

actaagctgg atgatgagat taagtcatgg cttgcatttg ctgcccaaaa ggttgttgag 120

gttaatgccc ttgccaaggc nttggcaggc caaaaggatg aggtctactt tgcagccaat 180

gctgctgctc aggcctcaag gagatcatcg cccagggtga caaacganga ggtccagaag 240

gctgcagctg ctttganggg atctgaccac cgccgttcta ccactgtntc tgctagattg 300

<210> 1346
<211> 290
<212> nucleic acid

<213> Zea mays

<400> 1346

ggacgcaaca tttgggctga tgatcttgct gcatctctta gcactcttca ttctcttgag 60

gctgttgctg gcaaggacaa acttgtggtg tcaacctcct gctcactgat gcacaccgct 120

gttgaccttg taaatgagac taagctggat gatgagatta agtcatggct tgcatttgct 180

gcccaaaagg ttgttgaggt taatgccctt gccaaggctt tggcaggcca aaaggatgag 240

gtctactttg cagccaatgc tgctgctcag gcctcaagga gatcatcgcc 290

<210> 1347
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1347

aacctcctgc tcactgatgc acaccgctgt tgaccttgta aatgagacta agctggatga 60

tgagattaag tcatggcttg catttgctgc ccaaaaggtt gttgaggtta atgcccttgc 120

caaggctttg gcaggccaaa aggatgaggt ctactttgca gccaatgctg ctgctcaggc 180

ctcaaggaga tcatcgccca gggtgacaaa cgaggaggtc cagaaggctg cagctgcttt 240

gaggggatct gaccaccgc 259

<210> 1348
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 1348

tgcttatcga gacatacttc gctgatattc ctgctgagtc ctacaagacc ctcacatcat 60

tgagtggtgt gactgcttac ggtttcgatc ttatccgtgg agccaagacc cttgatctta 120

tcaggagcag cttcccctct gggaagtacc tcttcgctgg tgttgtagat ggacgcaaca 180

tttgggctga tgatcttgct gcatctctta gcactcttca ttctcttgan gctgttgctg 240

gcaaggacaa acttgtggtg tcaacctcct gctcactgat gcacaccgct gttgac 296

<210> 1349
<211> 272
<212> nucleic acid

<213> Zea mays

<400> 1349

cctgctgagt cctacaagac cctcacgtca ttgagtggtg tgactgctta cggttttgat 60

cttatccgtg gagccaagac ccttgatctt atcaggagca gcttcccctc tgggaagtac 120

ctcttcgctg gtgttgtgga tggacgcaac atttgggctg atgatcttgc tgcatctctt 180

agcactcttc agtctcttga ggccgttgct ggcaaggaca aacttgtggt gtcaacctcc 240

tgctcactga tgcacaccgc tgttgatctt gt 272

<210> 1350
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1350

acgtcattga gtggtgtgac tgcttacggt tttgatctta tccgtggagc caagaccctt 60

gatcttatca ggagcagctt cccctctggg aagtacctct tcgctggtgt tgtggatgga 120

cgcaacattt gggctgatga tcttgctgca tctcttagca ctcttcagtc tcttgaggcc 180

gttgctggca aggacaaact tgtggtgtca acctcctgct cactgatgca caccgctgtt 240

gatcttgtca atgaaactaa gctgg 265

<210> 1351
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 1351

gtagatggac gcaacatttg ggctgatgat cttgctgcat ctcttagcac tcttcattct 60

cttgaggctg ttgctggcaa ggacaaactt gtggtgtcaa cctcctgctc actgatgcac 120

accgctgttg accttgtaaa tgagactaag ctggatgatg agattaagtc atggcttgca 180

tttgctgccc aaaaggttgt tgaggttaat gcccttgcca aggctttggc aggccaaa 238

<210> 1352
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1352

gatcttgctg catctcttag cactcttcag tctcttgagg ccgttgctgg caaggacaaa 60

cttgtggtgt caacctcctg ctcactgatg cacaccgctg ttgatcttgt caatgaaact 120

aagctggatg atgagattaa gtcatggctt gcatttgctg cccaaaaggt tgtcgaggtt 180

aatgcccttg cgaaggcttt ggcaggccaa aaggatgagg cttact 226

<210> 1353
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 1353

cctgctgagt cctacaagac cctcacntca gggantngtg tgactgctta cggttttgat 60

cttatccgtg gagccaagac ccttgatctt atcaggagca gcttcccctc tgggaagtac 120

ctcttcgctg gtgttgtgga tggacgcaac atttgggctg atgatcttgc tgcatctctt 180

agcactcttc agtctcttga ggccgttgct ggcaaggaca aacttgtggt gtcaacctcc 240

tgctcatg 248

<210> 1354
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 1354

cggacgnttg gcgcgagtgc tccctcctct gcngccatgg cgctctctgt ggagangacc 60

tcgtctggan cngagtacaa gttcaaggtc tctcncangc ggacttcggc cgcctcnaga 120

ttgagctncc cnagttcgaa atgcccgncc tcatgnctnc nccncngatt ncgcnctttn 180

aaancttnnn nagcgcaaaa ttc 203

<210> 1355
<211> 96
<212> nucleic acid
<213> Zea mays

<400> 1355

ttgggcttna aaactnacct ngnnttaagc gcattaccat taaaccccaa acnnancgct 60

tggtgtttcc ccagacnaaa actgngatan anntgc 96

<210> 1356
<211> 518
<212> nucleic acid
<213> Zea mays

<400> 1356

aagntctntn nttaaggagg naaatnnaat tnttgtcccg gtccggaatt cccgggtcga 60

cccacgcgtc cgcnnacgcg tncgctnacn cgtccgcaca ngcgtcngcn canncgttcg 120

cccacnacgg ncgatnnttc natttcccna tctcgtcana ttcaattcgc cgagttcttc 180

ctctctctgc tcgncatggc gctctatgtg ganaanacct cgtcatggac gggagtacaa 240

ggtcaaggat ctatagcang cngacttagn tcgccttgan attgatctgg ccnaggncga 300

aatgcncgna ctcatnggnt gccncgccca gtttggcccg ncnaagccct ttggcgntgc 360

taggatctng gnntctcttt acatgaccat tnacacnggn gaagtgattg agacnnttac 420

cgngctcgnt gccgaggtnc ngtggtgatc ntncaacatc ttattnacac angaccacgc 480

ttnaancgnn attggtncgc ganttgggtg canaaatt 518

<210> 1357
<211> 447
<212> nucleic acid
<213> Zea mays

<400> 1357

cggcaagatc cccgacccgg agtccaccga caacgctgag ttcaagatcg tgctcacnat 60

catccgcgac gggctcaagg ctgaccccaa gaagtaccgc aagatgaagg agaggcttgt 120

cggcgtctct gaggagacca ccacgggtgt caagaggctc taccagatgc aggagaccgg 180

cgccctcctc ttccctgcca ttaacgtcaa cgattccgtc accaagagca agtttgacaa 240

cctgtatggt tgccgccact cgctccctga tggtctgatg agggccactg acgttatgat 300

cgccggaaag gttgccgtgg tctgcggata cggtgatgtc ggcaagggtt gtgctgctgc 360

ctcaagcagg ctggtgcccg tgtcattgtg accgagatcg accccatctg tgcccttcaa 420

gctctgatgg anggtcttta ngtcctt 447

<210> 1358

<211> 515
<212> nucleic acid
<213> Zea mays

<400> 1358

gnnnagnnnn nnnannnttt gnangggggg gggaagagan attttancgg tccggattcc 60

cgggtcgacc cacgcgtccg ccatcatccg cgacgggctc aaggctgacc ccaagaagta 120

ccgcaagatg aaggagaggc ttgtcggcgt ctctgaggag accaccacgg gtgtcaagag 180

gctctaccag atgcaggaga ccggcgccct cctcttccct gccattaacg tcaacgattc 240

cgtcaccaag agcaagtttg acaacctgta tggttgccgc cactcgctcc ctgatggtct 300

gatgagggcc actgacgtta tgatcgccgg taaggttgct gtggtctgcg gatacggtga 360

tgtcggcaag ggttgtgctg ctgccctcaa gcaggctggt gcccgtgtca ttgtgaccga 420

gatcgacccc atctgtgccc tccaggctct gatggaaggg tcttcaggtc cttcccttgg 480

aagacgttgt ctctgaactg acatcttcgt gacca 515

<210> 1359
<211> 530
<212> nucleic acid
<213> Zea mays

<400> 1359

ggnnnagggt gntttngtcc naanntntnt ttnncttctg ccngtaccgg tccggattcc 60

cgggtcgacc cacgcgtccg cccacgcgtc cgtggttgac cacatgagga agatgaagaa 120

caatgccatt gtctgcaaca ttggccactt tgacaatgaa attgatatgc tcggccttga 180

gacctaccct ggcgtcaagc gcatcaccat caagccccag actgaccgct gggtgttccc 240

cgagaccaac actggcatca ttgtccttgc tgagggtcgc ctgatgaacc ttgggtgtgc 300

tactggccat cctagctttg tcatgtcctg ctcattcact aaccaggtca ttgcccaact 360

tgaactgtgg aaggagaaga gctctggcaa gtatgagaag aaggtgtatg tgctccccaa 420

gcaccttgat gagaaggttg ctgctctcca cttgggcaag cttggtgcca agctgaccaa 480

gctcaccaag tctnagccga ctacatnanc gtgcccatcg agggtcctac 530

<210> 1360
<211> 501
<212> nucleic acid

<213> Zea mays

<400> 1360

ggnngnnngn aattctaacn tncngcagcc tgcanaagtc canggtccac ccacncgtcg 60

ncgaggagga gtacgagaag accggcaaga tccccgaccc ggagtccacc gacaacgcga 120

gttcaagatc gtgctcacca tcatccgcga cgggctcaag gctgacccca agaagtacgc 180

aagatgaagg agaggcttgt cggcgtctct gaggagacca ccacgggtgt caagagctct 240

accagatgca ggagaccggc gccctcctct tccctgccat taacgtcaac gattcgtcac 300

caagagcaag tttgacaacc tgtatggttg ccgccactca ctccctgatg gtctatgagg 360

gccaccgacg ttatgatcgc cggtaaggtt gccgtggtct gcggatacgg tgagttggca 420

agggttgtgc cgctgcactc aaancangct gggtgcccgt gtcaantgtg acgaagattt 480

aacccaatct gcgncctcca a 501

<210> 1361
<211> 473
<212> nucleic acid
<213> Zea mays

<400> 1361

cgccggnaag gttgctgtgg tctgcggata cggtgatgtc ggcaagggtt gtgctgctgc 60

cctcaagcag gctggngccc gtgtcattgt gaccgagatc gaccccatct gtgccctcca 120

ngctctgatg gagggtcttc angtccttcc cttggaggac gttgtctctg aagctgacat 180

cttcgtgacc accactggca acaaggatat catnatggat gaccacatga ggaagatgaa 240

gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata tgctcggnct 300

tnanacctac cctgncgtca agcgcatnac catcaagccc cagactgacn cgctggntgg 360

nccccgagac caacactggg catcattgtc cttgctgaag gtcggctgat naaccttgng 420

tgttctactg ggcatcctan cttttgncat gtctggtcat ttactaaacc aag 473

<210> 1362
<211> 524
<212> nucleic acid
<213> Zea mays

<400> 1362

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ncgtccggga ncnatntccc catctcccag atccaattcg cgagttctcc ctcctctgcc 120

gccatggcgc tctcngtgga gaagacctcg tctggacggg agtacanggt caaggatctc 180

tcgcaggcgg acttcggccg cctcgagatt gagctggccg aggtcgaaat gcccggcctc 240

atggcgtgcc gcgccgagtt cggcccgtcc aagcccttcg ccggcgctag gatctcgggg 300

tctctccaca tgaccatcca ngaccgccgt cctcatcgag accctcaccg cgctcggcgc 360

cgangtccgc tggtgctcct gcaacatctt ctccacgcag gaccacgccg ccgccgccat 420

cgcgcgcgac tcggccgccg tgttcgcctg gaangggggaa accctcgang agtactggtg 480

gtgcancgaa cgctgcctcg actgggggcg angcggccgg cccc 524

<210> 1363
<211> 478
<212> nucleic acid
<213> Zea mays

<400> 1363

gnnnnnngna acttaagtng cagggccggt cangaataac gggncgaccc acgcgtccgt 60

tccatttccc catctcccag atccaattcg cgagttctcc ctcctctgcc gccatggcct 120

ctctgtggag aagacctcgt ctggacggga gtacaaggtc aaggatctct cgcaggcgac 180

ttcggccgcc tcgagattga gctggccgag gtcgaaatgc ccggcctcat ggcgtgcgcg 240

ccgagttcgg cccgtcgaag cccttcgctg gcgctaggat ctcggggtct ctccaatgac 300

catccagacc gccgtcctca tcgagaccct caccgcgctc ggcgccgang tccgtggtgc 360

tcctgcaaca tcttctccac gcaggaccac gccgccgccg ccatcgcgcg cgatcggccg 420

ccgtgttcgc ctggaagggg gaagacctcg aggagtactg gtggtgcacc gacgctgc 478

<210> 1364
<211> 528
<212> nucleic acid
<213> Zea mays

<400> 1364

gnnngnnnng nnnnnnnaag gtnnntgtnn ngnaaggagt tttatggnat actcgtccgg 60

anttcccggg tcgacccacg cgtccgcccc atctcccaga tccaattcgc gagttctttn 120

tcctctgccg ccatggcgct ctctgtggag aagacctcgt ctggacggga gtacaaggtc 180

aaggatctct cgcaggcgga cttcggccgc ctcgagattg agctggccga ggtcgaaatg 240

cccggcctca tggcgtgccg cgccgagttc ggcccgtcca agcccttcgc cggcgctagg 300

atctcggggt ctctccacat gaccatccag accgccgtcc tcatcgagac cctcaccgcg 360

ctcggcgccg aggtccgctg gtgctcctgc aacatcttct ccacgcagga ccacgccgcc 420

gccgccatcg cgcgcgactc ggccgccgtg ttcgcctgga agggggagac cctcgaggag 480

tactggtggt gcacccgagc gctgnctnga ctggggcnag gcgggccg 528

<210> 1365
<211> 354
<212> nucleic acid
<213> Zea mays

<400> 1365

cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg cgctaggatc tcggggtctc 60

tccacatgac catccagacc gccgtcctca tcgagaccct caccgcgctc ggcgccgagg 120

tccgctggtg ctcctgcaac atcttctcca cgcaggacca cgccgccgcc gccatcgcgc 180

gcgactcggc cgccgtgttc gcctggaagg gggagaccct cgaggagtac tggtggtgca 240

ccgagcgctg cctcgactgg ggcgaggcgg gcggccccga cctcatcgtc gacgacggcg 300

gcgacgccac gctgctcatc cacgagggtg tcaaggccga ggaggattac nana 354

<210> 1366
<211> 476
<212> nucleic acid
<213> Zea mays

<400> 1366

gggggngnaa cttcanntcc cagnngccgg tcaagaatta acgggtcgac gcncgcgtcc 60

ggctcaaggc tgaccccaag aagtaccgca agatgaagga gaggcttgtc ggcgtctctg 120

aggagaccac cacgggtgtc aagaggctct accagatgca ggagaccggc gccctcctct 180

tccctgccat taacgtcaac gattccgtca ccaagagcaa gtttgacaac ctgtatggtt 240

gccgccactc gctccctgat ggtctgatga gggccactga cgttatgatc gccggaaagg 300

ttgccgtggt ctgcggatac ggtgatgtcg gcaagggttg tgctgctgcc ctcaagcagg 360

ctggtgcccg tgtcattgtg accgagatcg accccatctg tgccctccag gctctgaatg 420

ganggtcttc aagtccttcc cttggaggac gttgtctcct gaagctgnca tcttng 476

<210> 1367
<211> 468
<212> nucleic acid
<213> Zea mays

<400> 1367

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tttgacaatg aaattgatat gctcggcctt gagacctacc ctggcgtcaa gcgcatcacc 120

atcaagcccc agactgaccg ctgggtgttc cccgagacca acactggcat cattgtcctt 180

gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt tgtcatgtcc 240

tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc 300

aagtatgaga agaaggtgta tgtgcttccc aagcaccttg atgagaaagg tgctgctctc 360

acttggggca agctttggtg ccaagcttac caaacttaac caagtcttaa ggccgactac 420

attaaccgtg cccgatcgaa gggtccctac aagcctgccc actnaccg 468

<210> 1368
<211> 484
<212> nucleic acid
<213> Zea mays

<400> 1368

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caaggctgac cccaagaagt accgcaagat gaaggagagg cttgtcggcg tctctgagga 120

gaccaccacg ggtgtcaaga ggctctacca gatgcaggag accggcgccc tcctcttccc 180

tgccattaac gtcaacgatt ccgtcaccaa gagcaagttt gacaacctgt atggttgccg 240

ccactcgctc cctgatggtc tgatgagggc cactgacgtt atgatcgccg gaaaggttgc 300

cgtggtctgc ggatacggtg atgtcggcaa gggttgtgct gctgccctca agcaggctgg 360

tgcccgtgtc attgtgaccg agatcgaccc catctgtgcc tccanggctc tgaatggaag 420

gtcttcangt ccttcccttg gaaggacgtt ggtctccgaa agctgacatc ttcgtgacna 480

acaa 484

<210> 1369
<211> 416
<212> nucleic acid
<213> Zea mays

<400> 1369

tgctcggcct tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc 60

gctgggtgtt ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga 120

accttgggtg tgctactggc catcctagct ttgtcatgtc ctgctcattc actaaccagg 180

tcattgccca acttgaactg tggaaggaga agagctctgg caagtatgag aagaaggtgt 240

atgtgctccc caagcacctt gatgagaagg ttgctgctct ccacttgggc aagcttggtg 300

ccaagctgac caagctcacc aagtctcagg ccgactacat cagcgtgccg atcgagggtc 360

cctacaagcc tgccactacc ggtactaggc aagccaggca cacggcttgc agctna 416

<210> 1370
<211> 452
<212> nucleic acid
<213> Zea mays

<400> 1370

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actgaccgct gggtgttccc cgagaccaac actggcatca ttgtccttgc tgagggtcgc 120

ctgatgaacc ttgggtgtgc tactggccat cctagctttg tcatgtcctg ctcattcact 180

aaccaggtca ttgcccaact tgaactgtgg aaggagaaga gctctggcaa gtatgagaag 240

aaggtgtatg tgctccccaa gcaccttgat gagaaggttg ctgctctcca cttgggcaaa 300

gcttggtgcc aagctgacca agctcaccaa gtcttaagcc gactacatca gcgtgccgat 360

cganggtccc tacaagcctg ccactaccgg tactangcaa gccagcacac ggcttgcagc 420

ttactcggcc cgttgtgtgc tatgaagttc ct 452

<210> 1371
<211> 481
<212> nucleic acid
<213> Zea mays

<400> 1371

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gcaagatgaa ggagaggctt gtcggcgtct ctgaggagac caccacgggt gtcaagaggn    60

nctaccagat gcaggagacc ggcgccctcc tnttccctgc cattaacgtc aacgattccg   120

tcaccaagag caagtttgac aacctgtatg gntgccgcca ctcgctccct gatggtctga   180

tgagggccac tgacgttatg atcgccggta aggntgctgn ggtctgcgga tacggngatg   240

tcggcaaggg ttgngctgct gccctcaagc aggctggtgc ccgtgtcatt gggaccgaga   300

tcgaccccat ctgngccctc caaggctctg atggagggnc ttcaggncct tcccttggag   360

gacgnngctn tgaaactgac atcttcggga ccaccactgg caacaaggat atcatcangg   420

gtgaccacat gaaggaagat gaagaacaaa gccaanggcn gggaacaatn ggccaanttg   480

a                                                                   481
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<210>       1372
<211>       445
<212>       nucleic acid
<213>       Zea mays

<400>       1372

cgccgtcctc atcgagaccc tcaccgcgnt cggcgccgag gtccgctggt gctcctgcaa    60

catcttctcc acgcaggacc acgccgccgc cgccatcgcg cgcgactcgg ccgccgtgtt   120

cgcctggaag gggagaccc ttgaggagta ctggtggtgc accgagcgct gcctcgactg   180

gggcgaggcg ggcggccccg acctcatcgt cgacgacggc ggcgacgcca cgctgctcat   240

ccacgagggt gtcaaggccg aggaggacta cgagaagacc ggcaagatcc ccgatccgga   300

gtcaccgaca acgctgagtt caagatcgtg ctnaccatca ttccgcgaan ggctnaaagn   360

ttaccccaag aagtcccgga aaggataaag aaaagcttgt cggcgtnttt taagagacca   420

cacnggtgtn aaaaggnttt acaga                                         445
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<210>       1373
<211>       512
<212>       nucleic acid
<213>       Zea mays

<400>       1373

ggggttggtg nnnnggtggg naaattatnt gttgtaccgg tccggaattc ccgggtcgac    60

ccacgcgtcc gcccacgcgt ccgctcacgc gttcgcccan ncntccagat ncaattcgcg   120
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agttctgggn tgctctgccg ccatggcgct ctctgtggag aagacctcgt ctggacggga 180

gtacaaggtc aaggatctct cgcaggcgga cttcggtcgc ctcgagattg agctggccga 240

ggtcgaaatg cccggcctca tggcgtgccg cgccgagttc ggcccgtcca agcccttcgc 300

cggcgctagg atctcggggt ctcttcacat gaccatccag accgccgtcc tcatcgagac 360

cctcaccgcg ctcggcgccg aggtccgctg gtgctcctgc aacatcttct ncacgcagga 420

ccacgccgtc ggcggcatcg ngcgcgactc ggncggcgtg ttcgcctgga aggggagac 480

cctttganga gtactggtgg tncaccnaac cg 512

<210> 1374
<211> 523
<212> nucleic acid
<213> Zea mays

<400> 1374

agaggctngt tttgantggg gattaanggn nncttaatgg aaagctcttc cggnccggcn 60

nccccgctcg acccangcnn tncanntnnt ggagggtctt naggtcctnc ncttggagga 120

cgttgtctnn gnagctgacn gnttcgtgac caccactggc aacaaggata tcatcatggt 180

tgaccacatg aggaagatga agaacaatgc cattgtctgc aacattggcc actttgacaa 240

tgaaattgat atgctcggcc ttgagaccta ccctggcgtc aagcgcatna ccatcaagcc 300

ccagactgac cgctgggtgt tccccgagac caacactggc atcattgtcc ttgctgaggg 360

tcgcctgatg aaccttgggt gtgctactgg ccatcctagc tttgtcatgt cctgctcatt 420

cactaaccag gtcattgccc aacttgaact gtggaaggag aagagctctg gcaagtatga 480

gaaagaangt gtatgtgctt cccaacacct ttgatgagaa ggt 523

<210> 1375
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 1375

cccagatcca attcgcgagt tctccctcct ctgccgccat ggcgctctct gtggagaaga 60

cctcgtctgg acnggagtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gctaggatct cggggtctct ccacatgacc atccagaccg 240

ccgtcctcat cgagaccctc accgcgctcg gcncccgagg tccgctggtg ctcctgcaac 300

atcttctnca cgcaggacca cnccttcgnc ngcatcgcgc gcgactcgnc cgccgtgttc 360

gcctggaaag ggggagnccc tcnaggagta ctggtggttc accnagccgc ttgccttgnc 420

tggggccnag gcngncggnc c 441

<210> 1376
<211> 488
<212> nucleic acid
<213> Zea mays

<400> 1376

ggnnnnnngg naacttnaac tnccagcgcc aggtaacggt caaagaattc ccgggtcgac 60

cacgcgtccg cggacgcgtg ggcccgttcc atttccccat ctcccagatc caattcgcag 120

ttctccctcc tctgccgcca tggcgctctc tgtggagaag acctcgtctg gacgggatac 180

aaggtcaagg atctctcgca ggcggacttc ggccgcctcg agattgagct ggccgagtcg 240

aaatgcccgg cctcatggcg tgccgcgccg agttcggccc gtccaagccc ttcgcggcgc 300

taggatctcg gggtctctcc acatgaccat ccagaccgcc gtcctcatcg agacctcacc 360

gcgctcggcg ccgaggtccg ctggtgctcc tgcaacatct tctccacgca aggccacgcc 420

gccgccgcca tcgcgcgcga ctcggncgcc gtgttcgcct ggaaggggga gactcgaagg 480

attatggg 488

<210> 1377
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 1377

caagaagtac cgcaagatga aggagaggct tgtcggcgtc tctgaggaga ccaccacggg 60

tgtcaagagg ctctaccaga tgcaggagac cggcgccctc ctcttccctg ccattaacgt 120

caacgattcc gtcaccaaga gcaagtttga caacctgtat ggttgccgcc actcactccc 180

tgatggtctg atgagggcca ccgacgttat gatcgccggt aaggttgccg tggtctgcgg 240

atacggtgat gttggcaagg gttgtgccgc tgcactcaag caggctggtg cccgtgtcat 300

tgtgaccgag atcgacccca tctgc 325

<210> 1378
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 1378

gaagctgaca tcttcgtgac caccactggc aacaaggata tcatcatggt tgaccacatg 60

aggaagatga agaacaatgc cattgtctgc aacattggcc actttgacaa tgaaattgat 120

atgctcggcc ttgagaccta ccctggcgtc aagcgcatca ccatcaagcc ccagactgac 180

cgctgggtgt tccccgagac caacactggc atcattgtcc ttgctgaggg tcgcctgatg 240

aaccttgggt gtgctactgg ccatcctagc tttgtcatgt cctgctcatt cactaaccag 300

gtcattgccc aacttgaact gtgga 325

<210> 1379
<211> 370
<212> nucleic acid
<213> Zea mays

<400> 1379

gtggtgcacc gagcgctgcc tcgactgggg cgaggcgggc ggccccgacc tcatcgtcga 60

cgacggcggc gacgcancgc tgctacatcc acgagggtgt caaggaccga ggaggattac 120

gagaagaccg gcaagatccc cgacccggag tccaccgaca acgctgagtt caagatcgtg 180

ctcaccatca tccgcgacgg gctcaaggct gaccccaaga agtntcgcaa gatgaaggag 240

aggcttgtcg gcgtctctga ggagaccacc acgggtgtca agaggctcta ccagatgcag 300

gagaccggcg ccctcctctt ccctgccatt aacgtcaaga ttccgtcacc aagagcaatt 360

tgacaacctg 370

<210> 1380
<211> 329
<212> nucleic acid
<213> Zea mays

<400> 1380

gcaagtttga caacctgtat ggttgccgcc actcgctccc tgatggtctg atgagggcca 60

ctgacgttat gatcgccgga aaggttgccg tggtctgcgg atacggtgat gtcggcaagg 120

gttgtgctgc tgccctcaag caggctggtg cccgtgtcat tgtgaccgag atcgacccca 180

tctgtgccct ccaggctctg atggagggtc ttcaggtcct tcccttggag gacgttgtct 240

ctgaagctga catcttcgtg accaccactg gcaacaagga tatcatcatg gttgaccaca 300

tgangaagat gaagaacaat gccattgtc 329

<210> 1381
<211> 346
<212> nucleic acid
<213> Zea mays

<400> 1381

cacgggtgtc aagaggctct accagatgca ggagaccggc gccctcctct tccctgccat 60

taacgtcaac gattccgtca ccaagagcaa gtttgacaac ctgtatggtt gccgccactc 120

actccctgat ggtctgatga gggccaccga cgttatgatc gccggtaagg ttgccgtggt 180

ctgcggatac ggtgatgttg gcaagggttg tgccgctgca ctcaagcagg ctggtgcccg 240

tgtcatgtga ccgagatcga ccccatctgc gccctccagg ctctgatgga gggtcttcag 300

tccttccctt ggaggacgtt gtctcggaag ctgacatctt cgtgac 346

<210> 1382
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 1382

ccgagcgctg ccttgactgg ggcgaggcgg gcggccccga cctcatcgtc gacgacggcg 60

gcgacgccac gctgctcatc cacgagggtg tcaaggccga ggaggagtac gagaagaccg 120

gcaagatccc cgacncggag tccaccgaca acgctgagtt caagatcgtg ctcaccatca 180

tccgcgacgg gctcaaggct gaccccaaga agtaccgcaa gatgaaggag aggcttgtcg 240

gcgtctctga ggagaccacc acgggtgtca agaggctcta ccagatgcag gagaccggcg 300

ccctcctctt ccctgccatt 320

<210> 1383
<211> 455
<212> nucleic acid

<213> Zea mays

<400> 1383

ctcaaggctg accccaagaa gtaccgcaag atgaaggaga ggcttgtcgg cgtctctgag 60

gagaccacca cgggtgtcaa gaggctctac cagatgcagg agaccggcgc cctcctcttc 120

cctgccatta acgtcaacga ttccgtcacc aagagcaagt ttgacaacct gtatggttgc 180

cggcactcgc tccctgatgg tctgatgagg gccactgacg ttatgatcgc cggtaaggtt 240

gctgtggtct gcggatacng tgatgtcggc aagggttgtg ctgctgcctn aaacaggctg 300

gtgccccgtg tcattgtgac ccagatcgac cccatctgtg cccttcaagc ttctgatnga 360

nggncttcan gtccttcctt tggaaggacg ttgtntttgn aacttgacat ttttngntgg 420

accaccactt gggaacaagg ggtnttatta ttggg 455

<210> 1384
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 1384

cgagatcgac cccatctgtg ccctccaggc tctgatggag ggtcttcagg tccttccctt 60

ggaggacgtt gtctctgaag ctgacatctt cgtgaccacc actggcaaca aggatatcat 120

catggttgac cacatgagga agatgaagaa caatgccatt gtctgcaaca ttggccactt 180

tgacaatgaa attgatatgc tcggccttga gacctaccct ggcgtcaagc gcatcaccat 240

caagccccag actgaccgct gggtgttccc cgagaccaac actggcatca ttgtccttgc 300

tgagggtcgc ctgatga 317

<210> 1385
<211> 332
<212> nucleic acid
<213> Zea mays

<400> 1385

gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata tgctcggcct 60

tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc gctgggtgtt 120

cccgagacca acactggcat cattgtcctt gctgagggtc gcctgatgaa ccttgggtgt 180

gctactggcc atcctagctt tgtcatgtcc tgctcattca ctaaccaggt cattgcccaa 240

cttgaactgt ggaaggagaa gagctctggc aagtatgaga agaaggtgta tgtgctcccc 300

aagcaccttg atgagaaggt tgctgctctc ca 332

<210> 1386
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 1386

cggcgccctc ctcttccctg ccattaacgt caacgattcc gtcaccaaga gcaagtttga 60

caacctgtat ggttgccgcc actcactccc tgatggtctg atgagggcca ccgacgttat 120

gatcgccggt aaggttgccg tggtctgcgg atacggtgat gttggcaagg gttgtgccgc 180

tgcactcaag caggctggtg cccgtgtcat tgtgaccgag atcgacccca tctgcgccct 240

ccaggctctg atggagggtc ttcaggtcct tcccttggag gagttgtctc ggaagctgac 300

atcttcgtga ccacccatgg caacaaggat atcatca 337

<210> 1387
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 1387

gtcttcaggt ccttcccttg gaggacgttg tctctgaagc tgacatcttc gtgaccacca 60

ctggcaacaa ggatatcatc atggttgacc acatgaggaa gatgaagaac aatgccattg 120

tctgcaacat tggccacttt gacaatgaaa ttgatatgct cggccttgag acctaccctg 180

gcgtcaagcg catcaccatc aagccccaga ctgaccgctg ggtgttcccc gagaccaaca 240

ctggcatcat tgtccttgct ganggtcgcc tgatgaacct tgggtgtgct actggccatc 300

ctagctttgt catgtc 316

<210> 1388
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1388

gcgctcggcg ccgaggtccg ctggtgctcc tgcaacatct tctccacgca ggaccacgcc 60

gccgccgcca tcncgcgcna ctcggccgcc gtgttcgcct ggaaggggga gacccttgan 120

gagtactggt ggtgcaccga gcgctgcctt gactggngcg angcgggcgg ccccnacctc 180

atcgtcgacg acggcggcga cgccacgctg ctcatccacg agggtgtcaa ggccgaggag 240

gagtacgaga agaccggcaa gatccccgac ccggagtcca ccgacaacgc tgagttcaag 300

atcgtggtca ccatc 315

<210> 1389
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1389

tctgaggaga ccaccacggg tgtcaagagg ctctaccaga tgcaggagac cggcgccctc 60

ctcttccctg ccattaacgt caacgattcc gtcaccaaga gcaagtttga caacctgtat 120

ggttgccgcc actcgctccc tgatggtctg atgagggcca ctgacgttat gatcgccgga 180

aaggttgccg tggtctgcgg atacggtgat gtcggcaagg gttgtgctgc tgccctcaag 240

caggctggtg cccgtgtcat tgtgaccgag atcgacccca tctgtgccct ccaggctctg 300

atggagggtc 310

<210> 1390
<211> 457
<212> nucleic acid
<213> Zea mays

<400> 1390

ggggtctctc cacatgacca tccagacnng caagatcccc gatccggagt ccaccgngna 60

cgctgagttc aagatcgtgc tcaccatcat ccgcgacggg ctcaaggctg accccaagan 120

gtaccgcaag atgaaggaga ggcttgtcgg cgtctntgag gagaccacca cgggtgtcaa 180

gaggctctac cagatgcagg agaccggcgc cctcctcttc ctgccattaa cgtcaacgat 240

tccgtcacca agagcaagtt tgacaacctg tatggttgcc gncactcgct ccctgatggt 300

ctgatgaagg gccactgacc ttatgatcgc ccgaaanggt gccgtggtct gcggataccg 360

tgatgtcngc aaagggttgt gcttnttnan ttaaancang cttggtggcc ctgtcantnt 420

gaaccananc caancccatn tttggncctt cagggtt 457

<210> 1391
<211> 520
<212> nucleic acid
<213> Zea mays

<400> 1391

agttnattna aggnnggngg ntgnaagnta tactcgtncg gaattcccgg gtcgacccac 60

gcgtccgatc tcncagaccc aattcgngag ttctnnntan tctgccgaca tggcgctctc 120

tgtggagaag acctgntctg gacgggagta caaggtcaag gatctctagc aggcggactn 180

aggccgacta gagattgagc tggccgaggt cgaaatgccc ggcctnatgg cgtgccgngc 240

cgagttcggc ccgtncaagc ccttngccgg cgctaggatc tcggggtctc tccacatgac 300

cattcagacc gncgtcctca tcgagaccct caccgcgctc ggcgccgagg tccgctggtg 360

ctcctgcaac atcnttcttc acgcangacc acgccgncgn cgtcatcgcn cgcgactcgg 420

ccggcgtgtt cgcctggaan ggggagaccc ttgangagtc tggtggtgca ccgnacgctt 480

gcntanntgg gccaagcggc cggcccgacc tattgtngac 520

<210> 1392
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1392

cgtcgacgac ggcggcgacg ccacgctgct catccacgag ggtgtcaagg ccgaggagga 60

ttacgagaag accggcaaga tctccgaccc ggagtccacc gacaacgctg agttcaagat 120

cgtgctcacc atcatccgcg acgggctcaa ggctgacccc aagaagtacc gcaagatgaa 180

ggagaggctt gtcggcgtct ctgaggagac caccacgggt gtcaagaggc tctaccagat 240

gcaggagacc ggcgccctcc tcttccctgc cattaacgtc aacgattccg tcaccaagag 300

caagt 305

<210> 1393
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 1393

gtgcccgtgt cattgtgacc gagatcgacc ccatctgcnc cctccaggct ctgatggagg 60

gtcttcaggt ccttcccttg gaggacgttg tctcggaagc tgacatcttc gtgaccacca 120

ctggcaacaa ggatatcatc atggttgacc acatgaggaa gatgaagaac aatgccattg 180

tctgcaacat tggccacttt ganaatgaaa ttgatatgct cggccttgag acctaccctg 240

gcgtcaagcg catcaccatc aagccccaga ctgaccgctg ggtgttcccc gagaccaaca 300

ctggcatcat tgtcctt 317

<210> 1394
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1394

gctgccttga ctggggcgag gcgggcggcc ccgacctcat cgtcgacgac ggcggcgacg 60

ccacgctgct catccacgag ggtgncaagg ccgaggagga gtacgagaag accggcaaga 120

tccccgaccc ggagtccacc gacaacgctg agttcaagat cgtgctcacc atcatccgcg 180

acgggctcaa ggctgacccc aagaagtacc gcaagatgaa ggagaggctt gtcggcgtct 240

ctgaggagac caccacgggt gtcaagaggc tctaccagat gcaggagacc ggcgccctcc 300

tcttccctg 309

<210> 1395
<211> 335
<212> nucleic acid
<213> Zea mays

<400> 1395

atcaagcccc agactgaccg ctgggtgttc cccgagacca acactggcat cattgtcctt 60

gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt tgtcatgtcc 120

tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc 180

aagtatgaga agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc 240

cacttgggca agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc 300

agcgtgccga tcgagggtcc ctacaagcct gccca 335

<210> 1396
<211> 334
<212> nucleic acid
<213> Zea mays

<400> 1396

atcaagcccc agactgaccg ctgggtgttc cccgagacca acactggcat cattgtcctt 60

gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt tgtcatgtcc 120

tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc 180

aagtatgaga agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc 240

cacttgggca agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc 300

agcgtgccga tcgagggtcc ctacaagcct gccc 334

<210> 1397
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 1397

aagcgcatca ccatcaagcc ccagactgac cgctgggtgt tccccgagac caacactggc 60

atcattgtcc ttgctgaggg tcgcctgatg aaccttgggt gtgctactgg ccatcctagc 120

tttgtcatgt cctgctcatt cactaaccag gtcattgccc aacttgaact gtggaaggag 180

aagagctctg gcaagtatga gaagaaggtg tatgtgctcc ccaagcacct tgatgagaag 240

gttgctgctc tccacttggg caagcttggt gccaagctga ccaagctcac caagtctcag 300

gccgactaca tcagcgt 317

<210> 1398
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1398

catcatccgc gacgggctca aggctgaccc caagaagtac cgcaagatga aggagaggct 60

tgtcggcgtc tctgaggaga ccaccacggg tgtcaagagg ctctaccaga tgcaggagac 120

cggcgccctc ctcttccctg ccattaacgt caacgattcc gtcaccaaga gcaagtttga 180

caacctgtat ggttgccgcc actcgctccc tgatggtctg atgagggcca ctgacgttat 240

gatcgccgga aaggttgccg tggtctgcgg atacggtgat gtcggcaagg gttgtgctgc 300

tgc 303

<210> 1399
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1399

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tgatggaggg tcttcaggtc cttcccttgg aggacgttgt ctcggaagct gacatcttcg 120

tgaccaccac tggcaacaag gatatcatca tggttgacca catgaggaag atgaagaaca 180

atgccattgt ctgcaacatt ggccactttg acaatgaaat tgatatnctc ggccttgaga 240

cctaccctgg cgtcaagcgc atcaccatca agccccagac tgaccgctgg gtgttccccg 300

agaccaacac t 311

<210> 1400
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 1400

caaggatatc atcatggttg accacatgag gaagatgaag aacaatgcca ttgtctgcaa 60

cattggccac tttgacaatg aaattgatat gctcggcctt gagacctacc ctggcgtcaa 120

gcgcatcacc atcaagcccc agactgaccg ctgggngttc cccgagacca acactggcat 180

cattgtcctt gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt 240

tgtcatgtcc tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa 300

gagctctg 308

<210> 1401
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1401

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ggagggtctt caggtccttc ccttggagga cgttgtctcg gaagctgaca tcttcgtgac 120

caccactggc aacaaggata tcatcatggt tgaccacatg aggaagatga agaacaatgc 180

cattgtctgc aacattggcc actttgacaa tgaaattgat atgctcggcc ttgagaccta 240

ccctggcgtc aagcgcatca ccatcaagcc ccagactgac cgctgggtgt tccccgagac 300

caacactgg 309

<210> 1402
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1402

cttcgtgacc accactggca acaaggatat catcatggtt gaccacatga ggaagatgaa 60

gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata tgctcggcct 120

tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc gctgggtgtt 180

ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga accttgggtg 240

tgctactggc catcctagct ttgtcatgtc ctgctcattc actaaccagg tcattgccaa 300

cttgaactgt g 311

<210> 1403
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 1403

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cgttatgatc gccggaaang ttgccgtggt ctgcggatac ggtgatgtcg gcaagggttg 120

tgctgctgcc ctcaagcagg ctggtgcccg tgtcattgtg accgagatcg accccatctg 180

tgccctccag gctctgatgg agggtcttca ggtccttccc ttggaggacg ttgtctctga 240

agctgacatc ttcgtgacca ccactggcaa caaggatatc atcaggttga ccacatgang 300

aagatgaaga acaatgccat gtctgcaaca tggccant 338

<210> 1404

<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1404

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ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga accttgggtg 120

tgctactggc catcctagct ttgtcatgtc ctgctcattc actaaccagg tcattgccca 180

acttgaactg tggaaggaga agagctctgg caagtatgag aagaaggtgt atgtgctccc 240

caagcacctt gatgagaagg ttgctgctct ccacttgggc aagcttggtg ccaagctgac 300

caagct 306

<210> 1405
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 1405

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ancaanntga ngcccgagtc attgtnaccg agatcgaccc catctgtgcc ctncaggctc 120

tgatggaggg tcttcaggtc cttcccttgn aggacgttgt ctctgaagct gacatcttcg 180

tgaccaccac tggcaacaag gatatcatca tggttgacca catgaggaag atgaagaaca 240

atgccattgt ctgcaacatt ggccactttg acaatgaaat tgatatgctc ggccttgaga 300

cctaccctgn cgtcaagcgc atcaccatca agccccagac tgaccgctgg gtgttccccg 360

agaccaacac ttggcattca ttgtccttgc tgaaggtcnc cctgattaac ctttggttgt 420

gcta 424

<210> 1406
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1406

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cccttggagg acgttgtctc tgaagctgac atcttcgtga ccaccactgg caacaaggat 120

atcatcatgg ttgaccacat gaggaagatg aagaacaatg ccattgtctg caacattggc 180

cactttgaca atgaaattga tatgctcggc cttgagacct accctggcgt caagcgcatc 240

accatcaagc cccagactga ccgctgggtg ttccccgaga ccaacactgg catcattgt 299

<210> 1407
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1407

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ccgccgtcct catcgagacc ctcaccgcgc tcggcgccga ggtccgctgg tgctcctgca 120

acatcttctc cacgcaggac cacgccgccg ccgccatcgc gcgcnactcg gccgccgtgt 180

tcgcctggna gggggagacc ctcgaggagt actggtggtg caccgagcgc tgcctcgact 240

ggngcgangc gggcggnccc gacctcatcg tcgacgacgg cggcgacgcc acgctgctc 299

<210> 1408
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1408

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gggggagacc cttgaggagt actggtggtg caccgagcgc tgccttgact ggggcgaggc 120

gggcggcccc gacctcatcg tcgacgacgg cggcgacgcc acgctgctca tccacgaggg 180

tgtcaaggcc gaggaggagt acgagaagac cggcaagatc cccgacccgg agtccaccga 240

caacgctgag ttcaagatcg tgctcaccat catccgcgac gggctcaagg ctgaccccaa 300

gaa 303

<210> 1409
<211> 494
<212> nucleic acid
<213> Zea mays

<400> 1409

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ccanttacaa ttccncatct cccatgattc aatttcgcga agttctccct cctctgcccc 120

atggcgctct ctgtggaaaa gacctcgtct ggacgggagt acaaggtcaa ggatctccgc 180

angcggactt cggncgcctc gagattgagc tggccgaggt cgaaatgccc ggcctctggc 240

gttgccgcgc cgagttcggc ccgtcnaagc ccttcgctgg cgctaggatc tcgggtctct 300

ccacatgacc atccaaaccg ccgtcctcat cgagaccctc accgcgctcg gcgcgaggtc 360

cgctggtgct cctgcaacat cttctccacg cangaccacg ccgccgccgc catgcgcgcg 420

actcggccgc cgntgttcnc cctggaangg gggaaaacct ccaagaanta ctgtggttca 480

ancgagccgc tgnt 494

<210> 1410
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1410

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gcgccgaggt ccgcnggtgc ncctgcaaca ncttcnccac gcaggaccac gccgcngccg 120

ccatcgcgcg cgantcggcc gcngtgtncg cctggaaggg ggagaccctc gangagtact 180

ggnggtgcac cgagcgctgc ctcgactggn gcgangcggg cggccccgac ctcatcgtcg 240

acgacggcgg cgacgccacg ctgctcatcc acgagggtgt caangccgag gaggattac 299

<210> 1411
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1411

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ttacgagaag accggcaaga tctccgaccc ggagtccacc gacaacgctg agttcaagat 120

cgtgctcacc atcatccgcg acgggctcaa ggctgacccc aagaagtacc gcaagatgaa 180

ggagaggctt gtcggcgtct ctgaggagac caccacgggt gtcaagaggc tctaccagat 240

gcagganacc ggcgccctcc tcttccctgc cattaacgtc nacgattccg tcaccaagag 300

ca 302

<210> 1412
<211> 485
<212> nucleic acid
<213> Zea mays

<400> 1412

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ntntgtggag aagacctcgt ctggacggga gtacaaggtc aaggatctct cgcaggcgga 120

cttcggtcgc ctcgagattg agctggccga ggtcgaaatg cccggcctca tggcgtgccg 180

cgccgagttc ggcccgtcca agcccttcgc cggcgctagg atctcggggt ctcttcacat 240

gaccatccag accgncgtcc tcatcgagac cctcaccgng ctcggcgccg aggtccgctg 300

gtgctctgca acatcttntt cacgcaagga cacgccgncg gccgncatcg cgcgcgactc 360

ggccggcgng ttcgcctgga aagggggaga ccctttgagg agtactggtg gtgcaccgag 420

ccgcttgnct tganttgggg ccaggcnggg cggcccgaac ctnaatggtn gacaacnggg 480

gggaa 485

<210> 1413
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1413

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gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt tgtcatgtcc 120

tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc 180

aagtatgaga agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc 240

cacttgggca agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc 300

agcgtgccga t 311

<210> 1414
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1414

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ctcttccctg ccattaacgt caacgattcc gtcaccaaga gcaagtttga caacctgtat 120

ggttgccgcc actcgctccc tganggtctg atgagggcca ctgacgttat gatcgccgga 180

aaggttgcng tggtntgcgg atacggtgat gtcggcaagg gttgtgctgc tgccctcaag 240

caggctggtg cccgtgtcat tgtgaccgan atcnacccca tctgtgnctc caggctctga 300

tggagggtct t 311

<210> 1415
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1415

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cgccgccgcc atcgcgcgcg actcggccgc cgtgttcgcc tggaaggggg agaccctcga 120

ggagtactgg tggtgcaccg agcgctgcct cgactggggc gaggcgggcg gccccgacct 180

catcgtcgac gacggcggcg acgccacgct gctcatccac gagggtgtca aggccgagga 240

ggattacgag aagaccggca agatccccga cccggagtcc 280

<210> 1416
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1416

gagatcgacc ccatctgcgc cctccaggct ctgatggagg gtcttcaggt ccttcccttg 60

gaggacgttg tctcggaagc tgacatcttc gtgaccacca ctggcaacaa ggatatcatc 120

atggttgacc acatgaggaa gatgaagaac aatgccattg tctgcaacat tggccacttt 180

gacaatgaaa ttgatatgct cggccttgag acctaccctg gcgtcaagcg catcaccatc 240

aagccccaga ctgaccgctg ggtgttcccc gagaccaaca ctggcatcat tgtcc 295

<210> 1417
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 1417

ctggcgtcaa gcgcatcacc atcaagcncc agactgaccg ctgggtgttc cccgagacca 60

acactggcat cattgtcctt gctgagggtc gcctgatgaa ccttgggtgt gctactggcc 120

atcctagctt tgtcatgtcc tgctcattca ctaaccaggt cattgcccaa cttgaactgt 180

ggaaggagaa gagctctggc aagtatgaga agaaggtgta tgtgctcccc aagcaccttg 240

atgagaaggt tgctgctctc cacttgggca agcttggtgc caagctggac caagctcacc 300

aagtctcagg ccgatacatc agcgtgccga tcgnggtcct acaagcctg 349

<210> 1418
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1418

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gatgttggca agggttgtgc cgctgcactc aagcaggctg gtgcccgtgt cattgtgacc 120

gagatcgacc ccatctgcgc cctccaggct ctgatggagg gtcttcaggt ccttcccttg 180

gaggacgttg tctcggaagc tgacatcttc gtgaccacca ctggcaacaa ggatatcatc 240

atggttgacc acatgaggaa gatgaagaac aatgccattg tctgcaacat tg 292

<210> 1419
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1419

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attccgtcac caagagcaag tttgacaacc tgtatggttg ccgccactca ctccctgatg 120

gtctgatgag ggccaccgac gttatgatcg ccggtaaggt tgccgtggtc tgcggatacg 180

gtgatgttgg caagggttgt gccgctgcac tcaagcaggc tggtgcccgt gtcattgtga 240

ccgagatcga ccccatctgc gccctccagg ctctgatgga gggtctt 287

<210> 1420
<211> 304
<212> nucleic acid

<213> Zea mays

<400> 1420

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aagctgacat cttcgtgacc accactggca acaangatat catcatggtt gaccacatga 120

ggaagatgaa gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata 180

tgctcggcct tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc 240

gctgggtgtt ccccgagacc aacactggca tcatgtcttg ctganggtcg cctgatgaac 300

cttg 304

<210> 1421
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1421

ggagtactgg tggtgcaccg agcgctgcct cgactggggc gaggcgggcg gccccgacct 60

catcgtcgac gacggcggcg acgccacgct gctcatccac gagggtgtca aggccgagga 120

ggattacnag aagaccggca agatccccga cccggagtcc accgacaacg ctgagttcaa 180

gatcgtgctc accatcatcc gcgacgggct caaggctgac cccaagaagt accgcaagat 240

gaaggagagg cttgtcggcg tctctgagga gaccaccacg ggt 283

<210> 1422
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 1422

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ctgaccgctg ggtgttcccc gagaccaaca ctggcatcat tgnccttgct gagggtcgcc 120

tgatgaacct tgggtgtgct actggccatn ctagctttgt catgtcctgc tcattcacta 180

accaggtcat tgcccaactt gaactgtgga aggagaagag ctctggcaag tatnanaaga 240

angtgtatgt gctncccaag caccttgatn agaangntgn tgntctncac ttgggcaagc 300

ttggtgccaa nctnaccaag cttaccaaag tcttaagncc gctacnttaa cctgcccntc 360

gaaggntcct tccaacctnn ccacnaaccg gtcttagnaa gcnnnacaac ggttngaant 420

<210> 1423
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1423

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tgacaacctg tatggttncn gccactcgct ccctgatggt ctgatgaggg ccactgacgt 120

tatgatcgcc ggaaaggttg ccgtggtctg cngatacggt gatgtcggca aggnttgtgc 180

tgctgccctc aagcaggctg gtgcccgtgt cattgtgacc ganatcgacc ccatctnttc 240

cctccaggct ctgatggagg gtcttcaggt ccttcccttg gaagacgttg tctctgaagc 300

tgacatcttc g 311

<210> 1424
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1424

cgacgccacg ctgctcatcc acgagggtgt caaggccgag gaggagtacg agaagaccgg 60

caagatcccc gacccggagt ccaccgacaa cgctgagttc aagatcgtgc tcaccatcat 120

ccgcgacggg ctcaaggctg accccaagaa gtaccgcaag atgaaggaga ggcttgtcgg 180

cgtctctgag gagaccacca cgggtgtcaa gaggctctac cagatgcagg agaccggcgc 240

cctcctcttc cctgccatta acgtcaacga ttccgtcacc aag 283

<210> 1425
<211> 369
<212> nucleic acid
<213> Zea mays

<400> 1425

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ggnctgatna gggccaccga cgttatgatc gccggtaagg ttgccgtggn ctgcngatac 120

cgtgatgttg gcaanggttg tgccnctgca ctcaagcagg ctgntgcccg tgtcattgtg 180

accgagatcg annccatctg cgccctccac gctctgatgg atgggtcttc aagtccttcc 240

cttggaggac gttgtctcgg gaagctgaca tcttcgtgac caccactggc aacaaggata 300

tcatcaatgg gttgancaca tgaaggaacg atgaaggaca atggcantgt ctgcaacatt 360

gggcaacnt 369

<210> 1426
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1426

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tccgcgacgg gctcaaggct gaccccaaga agtaccgcaa gatgaaggag aggcttgtcg 120

gcgtctctga ggagaccacc acgggtgtca agaggctcta ccagatgcag gagaccggcg 180

ccctcctctt ccctgccatt aacgtcaacg attccgtcac caagagcaag tttgacaacc 240

tgtatggttg ccgccactcg ctccctgatg gtctgatg 278

<210> 1427
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1427

cttcgtgacc accactggca acaaggatat catcatggtt gaccacatga ggaagatgaa 60

gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata tgctcggcct 120

tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc gctgggtgtt 180

ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga accttgggtg 240

tgctactggc catcctagct ttgtcatgtc ctgct 275

<210> 1428
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1428

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gatgaagaac aatgccattg tctgcaacat tggccacttt gacaatgaaa ttgatatgct 120

cggccttgag acctaccctg gcgtcaagcg catcaccatc aagccccaga ctgaccgctg 180

ggtgttcccc gagaccaaca ctggcatcat tgtccttgct gagggtcgcc tgatgaacct 240

tgggtgtgct actggccatc ctagctttgt catgt 275

<210> 1429
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 1429

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ccttgctgag ggtcgcctga tgaaccttgg gtgtgctact ggccatccta gctttgtcat 120

gtcctgctca ttcactaacc aggtcattgc ccaacttgaa ctgtggaagg agaagagctc 180

tggcaagtat gagaagaagg tgtatgtgct ccccaagcac cttgatgaga aggttgctgc 240

tctccacttg ggcaagcttg gtgccaagct gaccaagctc accaagtctc aggc 294

<210> 1430
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1430

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aagatgaaga acaatgccat tgtctgcaac attggccact ttgacaatga aattgatatg 120

ctcggccttg agacctaccc tggcgtcaag cgcatcacca tcaagcccca gactgaccgc 180

tgggtgttcc ccgagaccaa cactggcatc attgtccttg ctgagggtcg cctgatgaac 240

cttgggtgtg ctactggcca tcctagcttt gtcatg 276

<210> 1431
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1431

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gggtctctcc acatgaccat ccagaccgcc gtcctcatcg agaccctcac cgcgctcggc 120

gccgaggtcc gctggtgctc ctgcaacatc ttctccacgc aggaccacgc cgccgccgcc 180

atcgcgcgcg actcggccgc cgtgttcgcc tggnaagggg agacccttga ggagtactgg 240

tggtgcaccg agcgctgcct tgactggggc gangcgggcg gccccgac 288

<210> 1432
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1432

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gcaagtttga caacctgtat ggttgccgcc actcgctccc tgatggtctg atgagggcca 120

ctgacgttat gatcgccgga aaggttgccg tggtctgcgg atacggtgat gtcggcaagg 180

gttgtgctgc tgccctcaag caggctggtg cccgtgtcat tgtgaccgag atcgacccca 240

tctgtgccct ccaggctctg atggagggtc ttcaggtcct tccct 285

<210> 1433
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1433

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gacgttgtct ctgaagctga catcttcgtg accaccactg gcaacaagga tatcatcatg 120

gttgaccaca tgaggaagat gaagaacaat gccattgtct gcaacattgg ccactttgac 180

aatgaaattg atatgctcgg ccttgagacc taccctggcg tcaagcgcat caccatcaag 240

ccccagactg accgctgggt gttccccgag accaacactg 280

<210> 1434
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 1434

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cgttgtctcg gaagctgaca tcttcgtgac caccactggc aacaaggata tcatcatggt 120

tgaccacatg aggaagatga agaacaatgc cattgtctgc aacattggcc actttgacaa 180

tgaaattgat atgctcggcc ttgagaccta ccctggcgtc aagcgcatca ccatcaagcc 240

ccagactgac cgctgggtgt tccccgagac caacactggc atcatgtcct tgctgaaggt 300

cgcctgatga acttgg 316

<210> 1435
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1435

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gatctcgggg tctctccaca tgaccatcca gaccgccgtc ctcatcgaga ccctcaccgc 120

gctcggcgcc gaggtccgct ggtgctcctg caacatcttc tccacgcagg accacgccgc 180

cgccgccatc gcgcgcgact cggccgccgt gttcgcctgg aaagggggag accctcgagg 240

agtactggtg gtgcaccgag cgctgctcga ctggggcgaa gcgggcggcc cgacctca 298

<210> 1436
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1436

agaagaccgg caagatcccc gacccggagt ccaccgacaa cgctgagttc aagatcgtgc 60

tcaccatcat ccgcgacggg ctcaaggctg accccaagaa gtaccgcaag atgaaggaga 120

ggcttgtcgg cgtctctgag gagaccacca cgggtgtcaa gaggctctac cagatgcagg 180

agaccggcgc cctcctcttc cctgccatta acgtcaacga ttccgtcacc aagagcaagt 240

ttgacaactg tatggttgcc gcanttcgtt ccttgatggt ttgatgaggg ccactgang 299

<210> 1437
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1437

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gtcaaggccg aggaggagta cgagaagacc ggcaagatcc ccgacccgga gtccaccgac    60

aacgctgagt tcaagatcgt gctcaccatc atccgcgacg ggctcaaggc tgaccccaag   120

aagtaccgca agatgaagga gaggcttgtc gggcgtctct gaggagacca ccacgggtgt   180

caagaggctc taccagatgc aggagaccgg cgccctcctc ttccctgcca ttaacgtcaa   240

cgattccgtc accaagagca agtttgacaa cctgtatgg                          279
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<210> 1438
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1438

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gcaagatccc cgacccggag tccaccgaca acgctgagtt caagatcgtg ctcaccatca    60

tccgcgacgg gctcaaggct gaccccaaga agtaccgcaa gatgaaggag aggcttgtcg   120

gcgtctctga ggagaccacc acgggtgtca agaggctcta ccagatgcag gagaccggcg   180

ccctcctctt ccctgccatt aacgtcaacg attccgtcac caagagcaag tttgacaact   240

gtatggttgc cgccactcgc tccctgatgg tctgatg                            277
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<210> 1439
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 1439

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atttccccat ctcccagatc caattcgcga gttctccctc ctctgccgcc atggcgctct    60

ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg caggcggact   120

tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg gcgtgccgcg   180

ccgagttcgg cccgtccaag cccttcgccg gcgctaggat ctcggggtct ctccacatga   240

ccatccagac cgccgtcctc atcgagaccc tcaccgcgct cggcgccgag gtccgctggt   300

gctcctgcaa catcttct                                                 318
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<210> 1440
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 1440

cacatgacca tccagaccgc cgtcctcatc gagaccctca ccgcgctcgg cgccgaggtc 60

cgctggtgct cctgcaacat cttctccacg caggaccacg ccgccgccgc catcgcgcgc 120

gactcggccg ccgtgttcgc ctggaagggg gagaccctcg aggagtactg gtggtgcacc 180

gagcgctgcc tcgactgggg cgaggcgggc ggccccgacc tcatcgtcga cgacggcggc 240

gacgccacg 249

<210> 1441
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1441

cccagatcca attcgcgagt ncnccctcct ctgcggccat ggcgctctct gtggagaaga 60

cctcgtctgg acgggagtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gctaggatct cggggtctct ccacatgacc atccagaccg 240

ccgtcctcat cgagaccctn accgcgctcg gcgccgaggt ccgctggtgc tcctgcaaca 300

tcttctcca 309

<210> 1442
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1442

gtacgagaag accggcaaga tccccgaccc ggagtccacc gacaacgctg agttcaagat 60

cgtgctcacc atcatccgcg acgggctcaa ggctgacccc aagaagtacc gcaagatgaa 120

ggagaggctt gtcggcgtct ctgaggagac caccacgggt gtcaagaggc tctaccagat 180

gcaggagacc ggcgccctcc tcttccctgc cattaacgtc aacgattccg tcaccaagag 240

caagtttgac aacctgtatg gttgccgcca ctcact 276

<210> 1443
<211> 276
<212> nucleic acid

<213> Zea mays

<400> 1443

gtgaccgana tcgaccccat ctgtnccctc caggctctga tggagggtct tcaggtcctt 60

cccttggagg acgttgtctc tgaagctgac atnttcgtga ccaccactgg caacaaggat 120

atcatcatgg ttgaccacat gaggaagatg aagaacaatg ccattgtctg caacattggc 180

cactntgaca atgaaattga tatgctcggc cttgagacct accctggcgt caagcgcatc 240

accatcaagc cccagactga ccgctgggtg ttcccc 276

<210> 1444
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1444

agaagaccgg caagatcccc gacccggagt ccaccgacaa cgctgagttc aagatcgtgc 60

tcaccatcat ccgcgacggg ctcaaggctg accccaagaa gtaccgcaag atgaaggaga 120

ggcttgtcgg cgtctctgag gagaccacca cgggtgtcaa gaggctctac cagatgcagg 180

agaccggcgc cctcctcttc cctgccatta acgtcaacga ttccgtcacc aagagcaagt 240

ttgacaacct gtatggttgc cgccactcgc 270

<210> 1445
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1445

ggaggacgtt gtctctgaag ctgacatctt cgtgaccacc actggcaaca aggatatcat 60

catggttgac cacatgagga agatgaagaa caatgccatt gtctgcaaca ttggccactt 120

tgacaatgaa attgatatgc tcggccttga gacctaccct ggcgtcaagc gcatcaccat 180

caagccccag actgaccgct gggtgttccc cgagaccaac actggcatca ttgtccttgc 240

tgagggtcgc ctgatgaacc t 261

<210> 1446
<211> 291
<212> nucleic acid

<213> Zea mays

<400> 1446

tntgacaacc tgtatggttg ccgccactcg ctccctgatg gtctgatgag ggccactgac 60

gttatgatcg ccggaaaggt tgccgtggtc anncggatac ggtgatgtcg gcaagggttg 120

tgctgctgcc ctcaagcagg ctggtgcccg tgtcattgtg accgagatcg accccatctg 180

tgccctccag gctctgatgg agggtcttca ggtccttccc ttggaggacg ttgtctctga 240

agctgacatc ttcgtgacca ccactggcaa caaggatatc atcatggttg a 291

<210> 1447
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 1447

actggggcga ggcgggcggc cccgacctca tcgtcgacga cggcggcgac gccacgctgc 60

tcatccacga gggtgtcaag gccgaggagg agtacgagaa gaccggcaag atccccgacc 120

cggagtccac cgacaacgct gagttcaaga tcgtgctcac catcatccgc gacgggctca 180

aggctgaccc caagaagtac cgcaagatga aggagagctt gtcggcgtct taaggagacc 240

accagggtgt caagaagctc taccagatgc aagaaaccgg cgccctcctc ttccctgcca 300

ttaacgtnac gatccg 316

<210> 1448
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1448

cncgacctca tcgtcgacga cggcggcgac gccacgctgc tcatccacga gggtgtcaag 60

gccgaggagg agtacgagaa gaccggcaag atccccgacc cggagtccac cgacaacgct 120

gagttcaaga tcgtgctcac catcatccgc gacgggctca aggctgaccc caagaagtac 180

cgcaagatga aggagaggct tgtcggcgtc tctgaggaga ccaccacggg tgtncaagag 240

gctctaccag atgcaggaga ccggcgccct cct 273

<210> 1449

<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1449

cngacgctgg gtggctcctg caacatcttc tccacgcagg accacgccgc cgccgccatc 60

gcgcgcgaca cggccgccgt gttcgcctgg aagggggaga ccctcgagga gtactggtgg 120

tgcaccgagc gctgcctcga ctggggcgag gcgggcggcc ccgacctcat cgtcgacgac 180

ggcggcgacg ccacgctgct catccacgag ggtgtcaagg ccgaggagga ttacgagaag 240

accggcaaga tccccgaccc ggagtccacc g 271

<210> 1450
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1450

aacgattccg tcaccaagag caagtttgac aacctgtatg gttgccgcca ctcgctccct 60

gatggtctga tgagggccac tgacgttatg atcgccggaa aggttgccgt ggtctgcgga 120

tacggtgatg tcggcaaggg ttgtgctgct gccctcaagc aggctggtgc ccgtgtcatt 180

gtgaccgaga tcgaccccat ctgtgccctc caggctctga tggagggttn caaggtcctn 240

cccttggagg acgttgtctc ngaagatgac atctt 275

<210> 1451
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1451

gagatcgacc ccatctgcgc cctccaggct ctgatggagg gtcttcaggt ccttcccttg 60

gaggacgttg tctcggaagc tgacatcttc gtgaccacca ctggcaacaa ggatatcatc 120

atggttgacc acatgaggaa gatgaagaac aatgccattg tctgcaacat tggccacttt 180

gacaatgaaa ttgatatgct cggccttgag acctaccctg gcgtcaagcg catcaccatc 240

aagccccaga ctgaccgctg ggtgttcccc g 271

<210> 1452

<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1452

cattaacgtc aacgattccg tcaccaagag caagtttgac aacctgtatg gttgccgcca 60

ctcactccct gatggtctga tgagggccac cgacgttatg atcgccggta aggttgccgt 120

ggtctgcgga tacggtgatg ttggcaaggg ttgtgccgct gcactcaagc aggctggtgc 180

ccgtgtcatt gtgaccgaga tcgaccccat ctgcgccctc caggctctga tggagggtct 240

tcaggtcctt cccttggagg acgttgtctc ggaactg 277

<210> 1453
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1453

ctaccctggc gtcaagcgca tcaccatcaa gccccagact gaccgctggg tgttccccga 60

gaccaacact ggcatcattg tccttgctga gggtcgcctg atgaaccttg ggtgtgctac 120

tggccatcct agctttgtca tgtcctgctc attcactaac caggtcattg cccaacttga 180

actgtggaag gagaagagct ctggcaagta tgagaagaag gtgtatgtgc tccccaagca 240

ccttgatgag aaggttgctg ctctccactt ggg 273

<210> 1454
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1454

ggagggtctt caggtccttc ccttggagga cgttgtctct gaagctgaca tcttcgtgac 60

caccactggc aacaaggata tcatcatggt tgaccacatg aggaagatga agaacaatgc 120

natgtctgca acattggcca ctttgacaat gaaattgata tgctcggcct tgagacctac 180

cctggcgtca agcgcatcac catcaagccc cagactgacc gctgggtgtt ccccgagacc 240

aacactggca tcattgtcct tgctgagggt cgctgatgaa cttgggtgtg tatggccac 299

<210> 1455

<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1455

ccgccactcg ctccctgatg gtctgatgag ggccactgac gttatgatcg ccggaaaggt 60

tgccgtggtc tgcggatacg gtgatgtcnn gcaagggttg tgctgctgcc ctcaagcagg 120

ctggtgcccg tgtcattgtg accgagatcg accccatctg tgccctccag gctctgatgg 180

agggtcttca ggtccttccc ttggaggacg ttgtctctga agctgacatc ttcgtgacca 240

ccactggcaa caaggatatc atcatggttg accacatgag ga 282

<210> 1456
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1456

ggctgacccc aagaagtacc gcaagatgaa ggagaggctt gtcggcgtct ctgaggagac 60

caccacgggt gtcaagaggc tctaccagat gcaggagacc ggcgccctcc tcttccctgc 120

cattaacgtc aacgattccg tcaccaagag caagtttgac aacctgtatg gttgccgcca 180

ctcgctccct gatggtctga tganggccac tgacgttatg attcgccgga aaggttgccg 240

tggtctgcgg atacggtgat gtcggcaang gttgtgtgct gccctcaagc angctgg 297

<210> 1457
<211> 130
<212> nucleic acid
<213> Zea mays

<400> 1457

gngatcgacc ccatctgcgc cctccagnct ctnatggagg gtcttcaggt ccttcccttg 60

naggacgttg tctcggaagc tgacatcttc ggtgaccacc actggcaaca aggatatcan 120

ncatgggttg 130

<210> 1458
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 1458

catctcccag atccaattcg cgagttctcc ctcctctgcg gccatggcgc tctctgtgga 60

gaagacctcg tctggacggg agtacaaggt caaggatctc tcgcaggcgg acttcggccg 120

cctcgagatt gagctggccg aggtcgaaat gcccggcctc atggcgtgcc gcgccgagtt 180

cggcccgtcc aagcccttcg ccggcgctag gatctcgggg tctctccaca tgaccatcca 240

gaccgccgtc ctcatcgaga ccctcaccgc gctcggcgcc gaggtccgct ggtgctcctg 300

caac 304

<210> 1459
<211> 512
<212> nucleic acid
<213> Zea mays

<400> 1459

gnggnnnnng agtgnntnnt aatttggagg naaaatgtaa nggnaatctt cgtaccggtc 60

cggaannntc gacccacgcg tccgcccacg cgtccggacc aacactggca tcattgtcct 120

tgctgagggt cgnctgatga ncctggggtg tgctactggc catcctagct ttgncatgtc 180

ctgctcattc actaaccagg tcattgccca acttgaactg tggaaggaga agagctctgg 240

caagtatgaa aagaaggtgt atgtnctccc caagcacctt gatgagaagg ttgctgctct 300

ccacttgggc aancttggtg ccaagctgac caagctnacc aagtctcagg ccgactacat 360

cagcgtgccg atcgagggtc cctacaagcc tgccactacc ggtactaggc agccagcaca 420

cggnttgcaa ctnactcggg ccgtgtgtgc tatnaagccg ctcactggcc tgnagntatc 480

tnncgnannc tatggcataa acatanacgg ga 512

<210> 1460
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1460

gccacgcagg accacgccgc cgccgccatc gcgcgcgact cggccgccgt gttcgcctgn 60

aangggggaga cccttgagga gtactggtgg tgnaccgagc gctgccttga ctggggcgag 120

gcgggcggcc ccgacctcat cgtcgacgac ggcggcgacg ccacgctgct catccacgag 180

ggtgtcaagg ccgaggagga gtacgagaag accggcaaga tccccgaccc ggagtccacc 240

gacaacgctg agttcaagat cgt 263

<210> 1461
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 1461

ggtctctcca catgaccatc cagaccgccg tcctcatcga gaccctcacc gcgctcggcg 60

ccgaggtccg ctggtgctcc tgcaacatct tctccacgca ggaccacgcc gccgccgcca 120

tcgcgcgcga ctcggccgcc gtgttcgcct ggaaggggga gacccttgag gagtactggt 180

ggtgcaccga gcgctgcctt gactggggcg aggcgggcgg ccccgacctc atcgtcgacg 240

acggcgg 247

<210> 1462
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1462

ggaagatgaa gaacaatgcc attgtctgca acattggcca ctttgacaat gaaattgata 60

tgctcggcct tgagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc 120

gctgggtgtt ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga 180

accttgggtg tgctactggc catcctagct ttgtcatgtc ctgctcattc actaaccagg 240

tcattgccca acttgaactg 260

<210> 1463
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1463

ggccaccgac gttatgatcg ccggtaaggt tgccgtggtc tgcggatacg gtgatgttgg 60

caagggttgt gccgctgcac tcaagcaggc tggtgcccgt gtcattgtga ccgagatcga 120

ccccatctgc gccctccagg ctctgatgga gggtcttcag gtccttccct tggaggacgt 180

tgtctcggaa gctgacatct tcgtgaccac cactggcaac aaggatatca tcanggttga 240

ccacatgagg aagatganga acaatgccat tg 272

<210> 1464
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1464

ggttgaccac atgaggaaga tgaagaacaa tgccattgtc tgcaacattg gccactttga 60

caatgaaatt gatatgctcg gccttgagac ctaccctggc gtcaagcgca tcaccatcaa 120

gccccagact gaccgctggg tgttccccga gaccaacact ggcatcattg tccttgctga 180

gggtcgcctg atgaaccttg ggtgtgctac tggccatcct agctttgtca tgtcctgctc 240

attcactaac cag 253

<210> 1465
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1465

ccacgctgct catccacgag ggtgtcaagg ccgaggagga gtacgagaag accggcaaga 60

tccccgaccc ggagtccacc gacaacgctg agttcaagat cgtgctcacc atcatccgcg 120

acgggctcaa ggctgacccc aagaagtacc gcaagatgaa ggagaggctt gtcggcgtct 180

ctgaggagac caccacgggt gtcaagaggc tctaccagat gcaggagacc ggcgccctcc 240

tcttccctgc cattaacgtc a 261

<210> 1466
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1466

cggggtctct ccacatgacc atccagaccg ccgtcctcat cgagaccctc accgcgctcg 60

gcgccgaggt ccgctggtgc tcctgcaaca tcttctccac gcaggaccac gccgccgccg 120

ccatcgcgcg cgactcggcc gccgtgttcg cctggaaggg gagacccttg aggagtactg 180

gtggtgcacc gagcgctgcc ttgactgggg cgaggcgggc ggccccgacc tcatcgtcga 240

cgacggcggc gacgcacgct g 261

<210> 1467
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 1467

ctcccgttcc atttccccat ctcccagatc caattcgcga gttctccctc ctctgccgcc 60

atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg ccgctaggat ctcggggtct 240

ctccacatga ccatccagac cgccgtcctc atcgagaccc tcaccgcgct cggcgccgag 300

gtccgcaggt gctcctgcaa cat 323

<210> 1468
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1468

gctcggcctt gnagacctac cctggcgtca agcgcatcac catcaagccc cagactgacc 60

gctgggtgtt ccccgagacc aacactggca tcattgtcct tgctgagggt cgcctgatga 120

accttgggtg tgctactggc catcctagct ttgtcatgtc ctgctcattc actaaccagg 180

tcattgccca acttgaactg tggaaggaga agagctctgg caagtatgag aagaaggtgt 240

atgtgctccc caagcacctt gatgagaagg ttgctgc 277

<210> 1469
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1469

caaggatatc atcatggttg accacatgag gaagatgaag aacaatgcca ttgtctgcaa 60

cattggccac tttgaacaat gaaattgata tgctcggcct tgagacctac cctggcgtca 120

agcgcatcac catcaagccc cagactgacc gctgggtgtt ccccgagacc aacactggca 180

tcattgtcct tgctgagggt cgcctgatga accttgggtg tgctactggc catcctagct 240

ttgtcatgtc ctgctca 257

<210> 1470
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 1470

gtcggcgtct ctgaggagac caccacgggt gtcaagaggc tctaccagat gcaggagacc 60

ggcgccctcc tcttccctgg ccattaacgt caacgattcc gtcaccaaga gcaagtttga 120

caacctgtat ggttgccgcc actcgctccc tgatggtctg atgagggcca ctgacgttat 180

gatcgccgga aaggttgccg tggtctgcgg atacggtgat gtcggcaagg gttgtgctgc 240

tgcactcaag caggctggtg cc 262

<210> 1471
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 1471

tatggttgcc gccactcact ccctgatggt ctgatgaggg ccaccgacgt tatgatcgcc 60

ggtaaggttg ccgtggtctg cggatacggt gatgttggca agggttgtgc cgctgcactc 120

aagcaggctg gtgcccgtgt cattgtgacc gagatcgacc ccatctgcnc cctccaggct 180

ctgatggagg gtcttcaggt ccttcccttg gaggnntngt cacggaagct nanatttcgt 240

gaccaccact ggnaacaagg atatcatcat ggttgaccac atgaggaaga tgaanaacat 300

gccattgtct cnaattg 317

<210> 1472
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1472

cgactggggc gaggcgggcg gccccgacct catcgtcgac gacggcggcg acgccaacgc 60

tgctcatcca cgagggtgtc aaggccgagg aggattacga gaagaccggc aagatccccg 120

acccggagtc caccgacaac gctgagttca agatcgtgct caccatcatc cgcgacgggc 180

tcaaggctga ccccaagaag taccgcaaga tgaaggagag gcttgtcggc gtctctgagg 240

agaccaccac gggtgtcaag aggctcta 268

<210> 1473
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1473

ggcaagggtt gtgctgctgc cctcaagcag gctggtgccc gtgtcattgt gaccgagatc 60

gaccccatct gtgccctcca ggctctgatg gagggtcttc aggtccttcc cttggaggac 120

gttgtctctg aagctgacat cttcgtgacc accactggca acaaggatat catcatggtt 180

gaccacatga ggaagatgaa gaacaatgcc attgtctgca acattggcca tttgacaatg 240

aaattgatat gctcggcctt gagacctacc ctgg 274

<210> 1474
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1474

gttgtgctgc tgccctcaag caggctggtg cccgtgtcat tgtgaccgag atcgacccca 60

tctgtgccct ccaggctctg atggagggtc ttcaggtcct tcccttggag gacgttgtct 120

ctgaagctga catcttcgtg accaccactg gcaacaagga tatcatcatg gttgaccaca 180

tgaggaagat gaagaacaat gccattgtct gcaacattgg ccactttgac aatgaaattg 240

atatgctcgg ccttgagact acctggcgtc aagcgcatca catcaagccc 290

<210> 1475
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1475

cgagggtgtc aaggccgagg aggagtacga gaagaccggc aagatccccg acccggagtc 60

caccgacaac gctgagttca agatcgtgct caccatcatc cgcgacgggc tcaaggctga 120

ccccaagaag taccgcaaga tgaaggagag gcttgtcggc gtctctgagg agaccaccac 180

gggtgtcaag aggctctacc agatgcagga gaccggcgcc ctcctcttcc ctgccattaa 240

cgtcaacgat tcgtcaccag agcaagtttg acnactgtat ggttgccgca attcattccc 300

<210> 1476
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1476

anggtcttca ggtccttccc ttggaggacg ttgtctcgga agctgacatc ttcgtgacca 60

ccactggcaa caaggatatc atcatggttg accacatgag gaagatgaag aacaatgcca 120

ttgtctgcaa cattggccac tttgacaatg aaattgatat gctcggcctt gagacctacc 180

ctggcgtcaa gcgcatcacc atcaagcccc agactgaccg ctgggtgttc cccgagacca 240

acactggcat cattgtcctt 260

<210> 1477
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1477

attacnagaa gaccggcaag anccccgacc cggagtccac cgacaacgct gagttcaaga 60

tcgtgctcac catcatccgc nacgggctca aggctgaccc caagaagtac cgcaaganga 120

aggacgaggc ttgtcggcgt ctctgaggag accaccacgg gtgtcaagag gctctaccag 180

atgcaggaga ccggcgccct cctcttccct gccattaacg tcaangattc cgtcaccaag 240

agcaagtttg acaacntgta tggttgccgc caactcggct ccctgatggt ctgat 295

<210> 1478
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1478

gncgcngccg ccatcgcgcg cgactcggcc gccgtgttcg cctggaaggg ggagaccctt 60

gaggagtact ggtggtgcac cgagcgctgc cttgactggg gcgaggcggg cggccccgac 120

ctcatcgtcg acgacggcgg cgacgccaac gctgctcatc cacgagggtg tcaaggccga 180

ggaggagtac gagaagaccg gcaagatccc cgacccggag tccaaccgac aacgntgagt 240

tcaagatcgt gcttaccatc attcgggacn ggctcaaa 278

<210> 1479
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1479

gctgagggtc gcctgatgaa ccttgggtgt gctactggcc atcctagctt tgtcatgtcc 60

tgctcattca ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc 120

aagtatgaga agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc 180

cacttgggca agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc 240

agcgtgccga tcgagggtcc ctacaagcct gcccactacc ggtacta 287

<210> 1480
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1480

cgtcaccaag agcaagtttg acaacctgta tggttgccgc catcgctccc tgatggtctg 60

aatgagggcc actgacgtta tgatcgccgg aaaggttgcc gtggtctgcg gatacggtga 120

tntcggcaan ggttgtgctg ctgccctcaa gcaggctggt gcccgtgtca ttgtgaccga 180

gatcgacccc atctgtgccc tccaggctct gatggagggt cttcaggtcc ttcccttgga 240

ggacgttgtc tctgaagctg acatcttcgt gaccaccact ggcaacaagg atatcacatg 300

gttgac 306

<210> 1481
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1481

ctctgaagct gacatcttcg tgaccaccac tggcaacaag gatatcatca tggttgacca 60

catgaggaag atgaagaaca atgccattgt ctgcaacatt ggccactttg acaatgaaat 120

tgatatgctc ggccttgaga cctaccctgg cgtcaagcgc atcaccatca agccccagac 180

tgaccgctgg gtgttccccg agaccaacac tggcatcatt gtccttgctg anggtcgcct 240

gatgaacttg ggtgtgtatg gccatcctag tttgtcatgt cctgtcatna ctaaccagtc 300

attgnccaat tgaa 314

<210> 1482
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1482

atgccattgt ctgcaacatt ggccactttg acaatgaaat tgatatgctc ggccttgaga 60

cctaccctgg cgtcaagcgc atcaccatac aagccccaga ctgaccgctg ggtgttcccc 120

gagaccaaca ctggcatcat tgtccttgct gagggtcgcc tgatgaacct tgggtgtgct 180

actggccatc ctagctttgt catgtcctgc tcattcacta accaggtcat tgcccaactt 240

gaactgtgga aggagaagag ctctggcaag 270

<210> 1483
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1483

caccgacgtt atgatcgccg gtaaggttgc cgtggtctgc ggatacggtg atgttggcaa 60

ggnttgtgcc gctgcactca agcaggctgg tgcccgtntc attgtgaccg agatcgaccc 120

catctgcnnc ctccangctc tgatggaggg tcttcaggtc cttcccttgg aggacgttgt 180

ctcggaagct gacatcttcg tgaccaccac tggcaacaag gatatcatca tggttgacca 240

catgaggaag atgaagaaca atgcca 266

<210> 1484
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1484

ctcgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgcggccat 60

ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atctctcgca 120

ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg gcctcatggc 180

gtgccgcgnc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggtctct 240

ccacatgacc atccagaccg ccgtcctcat cgagaccctc accgcgctcg gcgccgaggt 300

ccgctggtgc tc 312

<210> 1485
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1485

aagccccaga ctgaccgctg ggtgttcccc gagaccaaca ctggcatcat tgtccttgct 60

gagggtcgcc tgatgaacct tgggtgtgct actggccatc ctagctttgt catgtcctgc 120

tcattcacta accaggtcat tgcccaactt gaactgtgga aggagaagag ctctggcaag 180

tatgaaagaa ggtgtatgtg ctccccaagc accttgatga gaaggttgct gctctccact 240

tgggcaagct tggtgccaag ctgaccaagc t 271

<210> 1486
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1486

actggggcga ggcgggcggc cccgacctca tcgtcgacga cggcggcgac gccaacgctg 60

ctcatccacg agggtgtcaa ggccgaggag gattacgaga agaccggcaa gatccccgac 120

ccggagtcca ccgacaacgc tgagttcaag atcgtgctca ccatcatccg cgacgggctc 180

aaggctgacc ccaagaagta ccgcaagatg aaggagaggc ttgtcggcgt ctctgaggag 240

accaccacgg gtgtcaagag gtctaccaga tgcag 275

<210> 1487
<211> 407
<212> nucleic acid

<213> Zea mays

<400> 1487

gtccttgctg agggtcgcct gatgaacctt gggtggggct actggccatc ctagctttgt 60

catgtcctgc tcattcacta accaggtcat tgcccaactt gaactgtgga aggagaagag 120

ctctggcaag tatgagaaga aggtgtatgt gctccccaag caccttgatg agaaggttgc 180

tgctctccac ttgggcaagc ttggtgccaa gctgaccaag ctcaccaagt ctcaggccga 240

ctacatcagc gtgccgatcg agggtcccta caagcctgcc cactaccggt actaggcaca 300

cggcttgcag ctnactcggg ccgttgtgtg ctatgaagtt cgctacactg gcctgtcaat 360

tatcttttgc atgcatatgc attatcatat acccaagtcg cgtacag 407

<210> 1488
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1488

ctcccagatc caattcgcga gttctccctc ctctgccgcc atggcgctct ctgtggagaa 60

gacctncgtc tggacgggag tacaaggtca aggatctctc gcaggcggac ttcggccgcc 120

tcgagattga gctggccgag gtcgaaatgc ccggcctcat ggcgtgccgc gccgagttcg 180

gcccgtccaa gcccttcgcc ggcgctagga tctcggggtc tctccacatg accatccaga 240

ccgccgtcct catcgagacc ctcaccgcgc tcggcgccga ggtccgctgg tgctcctgca 300

<210> 1489
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1489

ccgctgcact caagcaggct ggtgcccgtg tcattgtgac cgagatcgac cccatctncg 60

ccctccaggc tctgatggag ggtcttcagg tccttccctt ggaggacgtt gtctcggaag 120

ctgacatctt cgtgaccacc actggcaaca aggatatcat catggttgac cacatgagga 180

agatgaagaa caatgccatt gtctgcaaca ttggccactt tgacaatgaa attgatatgc 240

tcggccttga gacctaccc 259

<210> 1490
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1490

gagggccacc gacgttatga tcgccggtaa ggttgccgng gtctgcggnt acggtgatgt 60

tggcaagggt tgtgccgctg cactacaagc aggctggtgc ccgtgtcatt gtgaccgagn 120

atcgacccca tctgcgccct ccaggctctg atggagggtc ttcaggtcct tcccttggag 180

gacgttgtct cggaagctga catcttcgtg accaccactg gcaacaagga tatcatcatg 240

gttgaccaca tgaggaagat gaagaacaat gccatgtctg caacntggcc atttgacang 300

aat 303

<210> 1491
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1491

gtcgacgacg gcggcgacgc caacgctgct catccacgag ggtgtcaagg ccgaggagga 60

gtacgagaag accggcaaga tccccgaccc ggagtccacc gacaacgctg agttcaagat 120

cgtgctcacc atcatccgcg acgggctcaa ggctgacccc aagaagtacc gcaagatgaa 180

ggagangctt gtcggcgtct ttgaggagac caccangggt gtcaagaggt ctaccagatg 240

caggagaccg gcgccctcct cttccctg 268

<210> 1492
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1492

gttctagatc gcgagctaga actagcacca cgggtgtcaa gaggctctac cagatgcagg 60

agaccggcgc cctcctcttc cctgncatta acgtcaacga ttccgtcacc aagagcaagt 120

ttgacaacct gtatggttgc cgccactcgc tccctgatgg tctgatgagg gccactgacg 180

ttatgatcgc cggaaaggtt gccgtggtct gcggatacgg tgatgtcggc aagggttgtg 240

ctgctgccct caagcaggct ggtgccgtgt catgtgac 278

<210> 1493
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1493

gctcgnnctt gannnctacc cnggngtcaa gngcatcnnc atcangcccc agactgancg 60

ctgggnnttc cccnanacca acactggcat cantgtcctt gctganggtc gcctgatgaa 120

ccttnggtgt gcnactggcc atcctagctt tgtcangtnc tgctcattca ctaaccaggt 180

cattgcccaa cttgaactgt ggaaggagaa gagctctggc aagtatgaga agaaggtgta 240

tgtgctcccc aagcaccttg atgagaaggt tgctganctc ca 282

<210> 1494
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1494

gccatggcgc tctctgtgga gaagacctcg tctggacggg agtacaaggt caaggatctc 60

tcgcaggcgg acttcggccg cctcgagatt gagctggccg aggtcgaaat gcccggcctc 120

atggcgtgcc gcgccgagtt cggcccgtcc aagcccttcg ccggcgctag gatctcgggg 180

tctctccaca tgaccatcca gaccgccgtc ctcatcgaga ccctcaccgc gctcggcgcc 240

gaggtccgtg gtgtcctgca acatttctcc acnaggacca gccgcgcgca tgcgcggaan 300

ggcgc 305

<210> 1495
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1495

cccagatcca attcgcgagt tctccctcct ctgccgccat ggcgctctct gtggagaaga 60

cctcgtctgg acgggagtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gctaggatct cggggtctct ccacatgacc atccagaccg 240

ccgtcctcat cgagaccctc accgcgctcg gcgccgaggt ccgt 284

<210> 1496
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1496

ggagaggctt gtcggcgtct ctgaggagac caccacgggt gtcaagaggc tctaccagat 60

gcaggagacc ggcgccctcc tcttccctgc cattaacgtc aacgattccg tcaccaagag 120

caagtttgac aacctgtatg gttgccgcca ctcgctccct gatggtctga tgagggccac 180

tgacgttatg atcgccggaa aggttgccgt ggtctgcgga taccgtgatg tcggcaaagg 240

gttgtgctgc tgccctcaag cag 263

<210> 1497
<211> 347
<212> nucleic acid
<213> Zea mays

<400> 1497

ctccctcact cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct 60

ctgccgccat ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg 120

atctctcgca ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg 180

gcctcatggc gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct 240

cggggtctct ccacatgacc atccagaccg ccgtcctcat cgagaccctc accgcgctcg 300

gcgccgaagt ccgtggtgtc tgcaacatct tctccacgan gaccacg 347

<210> 1498
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1498

ctgagggtcg cctgatgaac cttgggtgtg ctactggcca tcctagcttt gtcatgtcct 60

gctcattcac nnaccaggtc attgcccaac ttgaactgtg gaaggagaag agctctggca 120

agtatgagaa gaaggtgtat gtgctcccca agcaccttga tgagaaggtt gctgctctcc 180

acttgggcaa gcttggtgcc aagctgacca agctcaccaa gtctcaggcc gactacatca 240

gcgtgccgat cgagggtccc tacaagcctg cccat 275

<210> 1499
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1499

ccgttccatt tccccatctc ccagatccaa ttcgcgagtt ctccctcctc tgccgccatg 60

gcgctctctg tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcan 120

gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg cctcatggcg 180

tgccgcgccg agttcggccc gtccaagccc ttcgccggcg ctaggatctc ggggtctctc 240

cacatgacca tccagaccgc cgtcctcatc gagaccctca ccgcgctcgg cgccgatgtc 300

cgctgg 306

<210> 1500
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1500

gtctctgaag ctgacatctt cgtgaccacc actggcaaca aggatatcat catggttgac 60

cacatgagga agatgaagaa caatgccatt gtctgcaaca ttggccactt tgacaatgaa 120

attgatatgc tcggccttga gacctaccct ggcgtcaagc gcatcaccat caagncccag 180

actgaccgct gggtgttccc cgagaccaac actggcatca ttgtccttgt tgagggtcgc 240

tgatgaactt ngggtgcaa ttggccatcc caactttggc 280

<210> 1501
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1501

cgagnacgcg tgggttcccc gagaccaaca ctggcatcat tgtccttgct gagggtcgcc 60

tgatgaacct tgggtgtgct aatntgccat cctaagcttg tcatgtcctg ctcattcact 120

aaccaggtca ttgcccaact tgaactgtgg aaggagaaga gctctggcaa gtatgagaag 180

aaggtgtatg tgctccccaa gcaccttgat gagaaggttg ctgctctcca cttgggcaag 240

cttggtgcca agctgaccaa gctcaccaag tctcaggccg actacatcag cgt 293

<210> 1502
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1502

cggacctggc gttccatttc cccatctccc agatccaatt cgcgagttct ccctcctctg 60

ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc 120

tctcgcaggc ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc 180

tcatggcgtg ccgcgccgag ttcggcccgt ccaagccctt cgccggcgct aggatctcgg 240

ggtctctcca catgaccatc cagaccgccg tcctcatcga gaccctcacc gcgctcggcg 300

ccgaggt 307

<210> 1503
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1503

tcgtgaccac cactggcaac aaggatatca tcatggttga ccacatgagg aagatgaaga 60

acaatgccat tgtctgcaac attggccact ttgacaatga aattgatatg ctcggccttg 120

agacctaccc tggcgtcaag cgcatcacca tcaagcccca gactgaccgc tgggtgttcc 180

ccgagaccaa cactggcatc attgtccttg ctgagggtcg cctgatgaac ct 232

<210> 1504
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1504

tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg gcgtgccgcg 60

ccgagttcgg cccgtccaag nccttcgccg gcgctaggat ctcggggtct ctccacatga 120

ccatccagac cgccgtcctc atcgagaccc tcaccgcgct cggcgccgag gtccgctggt 180

gctcctgcaa natcttctcc acgcaggacc acgctgccgc ngccatcgcg agcaantcgg 240

ccgcngtntt cgcttaaang gggaaaccct cgngnat 277

<210> 1505
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 1505

gttgtctctg aagctgacat cttcgtgacc accactggca acaaggatat catcatggtt 60

gaccacatga ggaanatgaa gaacaatgcc attgtctgca acattggcca ctttgacaat 120

gaaattgata tgctcggcct tgagacctac cctggcgtca agcgcatcac catcaagccc 180

cagactgacc gctgggtgtt ccccgagacc aacactggca tcattgtcct tgct 234

<210> 1506
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 1506

tgaaggagag gcttgtcggc gtctctgagg agaccaccac gggtgtcaag aggctctacc 60

agatgcagga gaccggcgcc ctcctcttcc ctgccattaa cgtcaacgat tccgtcacca 120

agagcaagtt tgacaacctg tatggttgcc gccactcact ccctgatggt ctgatgaggg 180

ccaccgacgt tatgatcgcc ggtaaggttg ccgtggtctg cggatacggt gatgtttg 238

<210> 1507
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1507

gtcgcacgca cgcgtacgta agctcggaat tcggctcgag ggcgacgcca cgctgctcat 60

ccacgagggt gtcaaggccg aggaggatta cgagaagacc ggcaagatcc ccgacccgga 120

gtccaccgac aacgctgagt tcaagatcgt gctcaccatc atccgcgacg ggctcaaggc 180

tgaccccaag aagtaccgca agatgaagga gaggcttgtc ggcgtctctg aggagaccac 240

cacgggtgtc aagaggctct accagatgca ggagaccggc g 281

<210> 1508
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1508

gaagaacaat gccattgtct gcaacattgg ccactttgac aatgaaattg atatgctcgg 60

ccttgagacc taccctggcg tcaagcgcat caccatcaag ccccagactg accgctgggt 120

gttccccgag accaacactg gcatcattgt ccttgctgag ggtcgcctga tgaaccttgg 180

gtgtgctact ggccatccta gctttgtcat gtcctgctca ttcactaacc aggnc 235

<210> 1509
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1509

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cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc ggacttcggc cgcctcgaga 120

ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg ccgcgccgag ttcggcccgt 180

ccaagccctt cgccggcgct aggatctcgg ggtctctcca catgaccatc cagaccgccg 240

tcctcatcga gaccctcacc gcgctcggcg ccgangtccg tggtgtcctg caacatttc 299

<210> 1510
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1510

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gctcggcctt gagacctacc ctggcgtcaa gcgcatcacc atcaagcccc agactgaccg 120

ctgggtgttc cccgagacca acactggcat cattgtcctt gctgagggtc gcctgatgaa 180

ccttgggtgt gctactggcc atcctagctt tgtcatgtcc tgctcatcac taaccaggtc 240

atgcccaact tgaactgtgg aaggagaaga gctctggcaa 280

<210> 1511
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1511

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ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atctctcgca 120

ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg gcctcatggc 180

gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggtctct 240

ccacatgacc atccagaccg ccgtcctcat cgagaccctc accgcgctcg gcgccgag 298

<210> 1512
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 1512

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gaaattgata tgctcggcct tgagacctac cctggcgtca agcgcatcac catcaagccc 120

nagactgacc gctgggtgtt ccccgagacc aacactggca tcattgtcct tgctgagggt 180

cgcctgatga accttgggtg tgctactggc catcctagct tggncatgtc cnngctaann 240

antaacnagg 250

<210> 1513
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1513

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ggggcgaggc gggcggcccc gacctcatcg tcgacgacgg cggcgacgcc acgctgctca 120

tccacgaggg tgtcaaggcc gaggaggatt acgagaagac cgncangatc cccgacccgg 180

agtccaccga caacgctgag ttcaagatcg tgctcaccat catccgcgac gggctcaagg 240

ctgaccccaa gaagtaccgc aagatgaagg agaggcttgt cggcgtctct g 291

<210> 1514
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1514

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tggcgctctc tgtggagaag acctcgtctg gacgggagta caaggtcaag gatctctcgc 120

aggcggactt cggccgcctc gagattgagc tggccgaggt cgaaatgccc ggcctcatgg 180

cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg cgctaggatc tcggggtctc 240

tccacatgac catccagacc gccgtcctca tcgagaccct caccgcgctc ggcgccgagg 300

<210> 1515
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 1515

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gacgttgtct ctgaagctga catcttcgtg accaccactg gcaacaagga tatcatcatg 120

gttgaccaca tgaggaagat gaagaacaat gccattgtct gcaacattgg ccactttgac 180

aatgaaattg atatgctcgg ccttgagacc taccctggcg tcaagcgcat caccatc 237

<210> 1516
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 1516

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ctgagggtcg cctgatgaac cttgggtgtg ctactggcca tcctagcttt gtcatgtcct 120

gctcattcac taaccaggtc attgcccaac ttgaactgtg gaaggagaag agctctggca 180

agtatgagaa gaaggtgtat gtgctcccca agcaccttga tgagaaggtt gctgctctcc 240

acttg 245

<210> 1517
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1517

ctctcgttcc atttccccat ctcccagatc caattcgcga gttctccctc ctctgcggcc 60

atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg gcgctaggat ctcggggtct 240

ctccacatga ccatccagac cgccgtcctc atcgagaccc tcaccgcgct cggcgccg 298

<210> 1518
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 1518

ggattacgag aagaccggca agatccccga cccggagtcc accgacaacg ctgagttcaa 60

gatcgtgctc accatcatcc gcgacgggct caaggctgac cccaagaagt accgcaagat 120

gaaggagagg cttgtcggcg tctctgagga gaccaccacg ggtgtcaaga ggctctacca 180

gatgcaggag accggcgccc tcctcttccc tgccattaac gtcaacgatt ccgtcacca 239

<210> 1519
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1519

cctgatgaac cttgggtgtg ctactggcca tcctancctt tgtcatgtcc tgctcattca 60

ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc aagtatgaga 120

agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc cacttgggca 180

agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc agcgtgccga 240

tcgagggtcc ctacaagcct gcccactacc ggtactag 278

<210> 1520

<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1520

agctgacatc ttcgtgacca ccactggcaa caaggatatc atcatggttg accacatgag 60

gaagatgaag aacaatgcca ttgtctgcaa cattggccac tttgacaatg aaattgatat 120

gctcggcctt gagacctacc ctggcgtcaa gcgcatcacc atcaagcccc agactgaccg 180

ctgggtgttc cccgagacca acactggcat cattgtcttg ctgagggtcg ctgatgaact 240

tggtgtgtat ggccatctag tttgtcatgt ct 272

<210> 1521
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1521

cccatctccc agatccaatt cgcgagttct ccctcctctg ccgccatggc gctctctgtg 60

gagaagacct cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc ggacttcggc 120

cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg ccgcgacgag 180

ttcggcccgt ccaagccctt cgccggcgct aggatctcgg ggtctctcca catgaccatc 240

cagaccgccg tcctcatcga gaccctcacc gcgctcggcg ncg 283

<210> 1522
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1522

gacctaccct ggcgtcaagc gcatcaccat caagccccag actgaccgct gggtgttccc 60

cgagaccaac actggcatca ttgtccttgc tgagggtcgc ctgatgaacc ttgggtgtgc 120

tactggccat cctagctttg tcatgtcctg ctcattcact aaccaggtca ttgcccaact 180

tgaactgtgg aaggagaaga gctctggcaa gtatgagaag aaggtgtatg tgctc 235

<210> 1523
<211> 313
<212> nucleic acid

<213> Zea mays

<400> 1523

ccgagcgctg cctcgactgg ggcgaagcgg gcggccccga cctcatcgtc gacgacggcg 60

gcgacgccac gctgctcatc cacganggtg tcaaggccga ggaggattac gagaagaccg 120

gcaaaatncc cganccccgga gatcancgga naaagcgngt ncaaaaagtg gnncaanaat 180

aatcgggaag gggtnaangn tnaccccnag aagtaccgca agatgaanga gaggcttgtn 240

ggcgtctctn aggagaccac cacgggtgtn aagaggctct accagatgca ggagaccggc 300

ggcctctctt tcc 313

<210> 1524
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1524

ctcgttccat ttccccatct cccagatcca attcgcgagt nctccctcct ctgcggccat 60

ggcgctctct gtggagnaga cctcgtnnng acgggagtac aaggtcaagg atctctcgca 120

ggcggacttc ggccgcgccg agattgagct ggccgaggtc gaaatgcccg gcctcatggc 180

gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggtctct 240

ccacatgacc atccagaccg ccgtcctcat cgagaccctc ancgcgctcg gcgccgagg 299

<210> 1525
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1525

ggaggattac gagaagaccg gcaagatccc cgacccggag tccaccgaca acgctgagtt 60

caagatcgtg ctcaccatca tccgcgacgg gctcaaggct gaccccaaga agtaccgcaa 120

gatgaaggag aggcttgtcg gcgtctctga ggagaccacc acgggtgtca agaggctcta 180

ccagatgcag gagaccggcg ccctcctctt ccctgccatt aacgtcaacg at 232

<210> 1526
<211> 317
<212> nucleic acid

<213> Zea mays

<400> 1526

cctcactccc gttccatttc cccatctccc agatccaatt cgcgagttct ccctcctctg 60

ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc 120

tctcgcaggc ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc 180

tcatggcgtg ccgcgccgag ttcggcccgt ccaagcnttt cgccggcgct aggatcttcg 240

gggtctctcc acatgaccat ccagaccgcc gtcctcatcg agaccctcac cgcgctggcg 300

ccgaagtccg ctggtgt 317

<210> 1527
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1527

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tggcgctctc tgtggagaag acctcgtctg gacgggagta caaggtcaag gatctctcgc 120

aggcggactt cggccgcctc gagattgagc tggccgaggt cgaaatgccc ggcctcatgg 180

cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg cgctaggatc tcggggtctc 240

tccacatgac catccagacc gccgtcctca tcgagaccct caccgcgct 289

<210> 1528
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1528

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ggccatggcg ctctctgtgg agaagacctc gtctggacgg gagtacaagg tcaaggatct 120

ctcgcaggcg gacttcggcc gcctcgagat tgagctggcc gaggtcgaaa tgcccggcct 180

catggcgtgc ngcgacgagt tcggcccgtc caagcccttc gccggcgcta ggatctcggg 240

gtctctccac atgaccatcc agaccgccgt cctcatcgag accctcaccg cgctcggng 299

<210> 1529

<211> 245
<212> nucleic acid
<213> Zea mays

<400> 1529

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ctgatgaacc ttgggtgtgc tactggccat cctagctttg tcatgtcctg ctcattcact    60

aaccaggtca ttgcccaact tgaactgtgg aaggagaaga gctctggcaa gtatgagaag   120

aaggtgtatg tgctccccaa gcaccttgat gagaaggttg ctgctctcca cttgggcaag   180

cttggtgcca agctgaccaa gctcaccaag tctcaggccg actacatcag cgtgccgatc   240

gaggg                                                               245
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<210> 1530
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1530

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cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgccgccat    60

ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atctctcgca   120

ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg gcctcatggc   180

gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggtctct   240

ccacatgacc atccagaccg ccgtcctcat cgagaccctc accgcgc                 287
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<210> 1531
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1531

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gctcaccatc atccgcgacg ggctcaaggc tgaccccaag aagtaccgca agatgaagga    60

naggcttgtt cggcgtctct gaggagacca ccacgggtgt tcaagaggct ctaccagatg   120

caggagaccg gcgccctcnt cttccctgcc attaacgtca acgattccgt caccaagagc   180

aagtttgana acctgtatgg ttgccgccan tcgtcctgat ggtctgatga gggcactgac   240

gttatgatcg ccggaaggtn gccgtggtct gcgaatacgt ntt                     283
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<210> 1532

<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1532

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gcgctctctg tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcag 120

gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg cctcatggcg 180

tgccgcgncg agttcggccc gtccaagccc ttcgccggcg ctaggatctc ggggtcttcc 240

acatgaccat ccagaccgcc gtcctcatcg agaccctcac cgcgctcggc gcgaggtccg 300

t 301

<210> 1533
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1533

ctgagggtcg cctgatgaac cttgggtgtg ntactggcca tcctagnctt tgtcatgtcc 60

tgctcattca ctaaccaggt cattgcccaa cntgaactgt ggaaggagaa gagctctggc 120

aagtatgaga agaaggtgta tgtgctcccc aagcaccttg atgagaaggt tgctgctctc 180

cacttgggca agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc 240

agcgtgccga tcgaggtcct acaagcct 268

<210> 1534
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1534

ctctcgttcc atttccccat ctcccagatc caattcgcga gttctccctc ctctgcggcc 60

atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgang tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaan cccttcgccg gcgctaggat ctcggggtct 240

ctccacatga ccatccagac cgccgtcctc atcgagaccc tcaccg 286

<210> 1535
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 1535

gcaantttga caacctgtat ggttgccgcc actcactccc tgatggtctg atganggcca 60

ccgacgttat gatcgccggt aaggttgccg tggtctgcgg atacggtgat gttggcaagg 120

gttgtgccgc tgcantcaag caggctggtg cccgtgtcat tgtgaccgag atcgacccca 180

tctnngccct ccaggctctg ntggagggtc ttcaggtcct tcccttggag gac 233

<210> 1536
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 1536

ctcccagatc caattcgcga gttctccctc ctctgccgcc atggcgctct ctgtggagaa 60

gacctcgtct ggacgggagt acaaggtcaa ggatctctcg caggcggact tcggccgcct 120

cgagattgag ctggccgagg tcgaaatgcc cggcctcatg gcgtgccgcg ccgagttcgg 180

cccgtccaag cccttcgccg gcgctaagat ctcggggtct ctccacatga ccatccagac 240

cgccgtcctc atcgagaacc tcaccgcntt ggcgccgaag tccgtggtgt cctgcaanat 300

tttccangca gaccaggcgg cggcggcatg ggcggatgg 339

<210> 1537
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1537

antggngnan cggggctcaa ggctgacccc aagaagtacc gcaagatgaa ggagagactt 60

gtcggcgtct ctgaggagac nnccacggga nttcaagagg cactacncag atgcaggana 120

ccggcgccct cctcttccct gccattaacg tcaacgattc cgtcaccaag agcaagtttg 180

acaacctgta tggttgccgc cactcgctcc ctgatggtct gatgagggcc actgacgtta 240

tgatcgccgg aaaggttgcc gtg 263

<210> 1538
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1538

attgtgaccg agatcgaccc catctgtgcc ctccaggctc tgatggaggg tcttcaggtc 60

cttcccttgg aggacgttgt ctctgaagct gacatcttcg tgaccaccac tggcaacaag 120

gatatcatca tggttgacca catgaggaag atgaagaaca atgccattgt ctgcaacatt 180

ggccactttg acaatgaaat tgatatnctc ggccttgata cctacc 226

<210> 1539
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1539

ctcactcccg ttccntttcc ccatctccca gntccanttc gcgagttctc cctcctctgc 60

cgccatggcg ntctctgtgg agaagacntc gtctggacgg gagtacaagg tcaaggatnt 120

ctcgcaggcg ganttcggcc gcctcgagat tganctggcc gaggtcgaaa tgcccggcct 180

catggcgtgc cgcgccgagt tcggcccgtc caancccttc gccggcncta ggatntcggg 240

gtctctccac atgaccatcc agaccgccgt cctcatcgag accctcaccg cgctcggcnt 300

ga 302

<210> 1540
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1540

agctgacatc ttcgtgacca ccactggcaa caaggatatc atcatggttg accacatgag 60

gaagatgaag aacaatgcca ttgtctgcaa cattggccac tttgacaatg aaattgatat 120

gctcggcctt gagacctanc ctggcgtcaa ggcatcacca tcaagcccca gactgancgc 180

tgggtgtttc cccgagacca acactggcat cattgtcctt gctgagggtc gctggatgna 240

ncttgggtgt gctactgggc atcctagttt tgtcatg 277

<210> 1541
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1541

ccgttccatt tccccatctc ccagatccaa ttcgcgagtt ctccctcctc tgcctcgact 60

ggggcgaggc gggcggcccc gacctcatcg tcgacgacgg cggcgacgcc aacgctgctc 120

atccacgagg gtgtcaaggc cgaggaggat tacgagaaga ccggcaagat tccgacccgg 180

agtccaccga caacgctgag ttcaagatcg tgctcaccat catccgcgac gggctcaagg 240

ctgaccccaa gaagtaccgc aagatgaagg agag 274

<210> 1542
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 1542

cggaacgctg gganagctgac atcttcgtga ccaccactgg caacaaggat atcatcatgg 60

ttgaccacat gaggaagatg aagaacaatg ccattgtctg caacattggc cactttgaca 120

atgaaattga tatgctcggc cttgagacct accctggcgt caagcgcatc accatcaagc 180

cccagactga ccgtgggtgt tccccgagac caacactggc atcatgtctt gtgaaggtcg 240

ctg 243

<210> 1543
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1543

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ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc 120

tctcgcaggc ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc 180

tcatggcgtg ccgcgccgag ttcggcccgt ccaagccctt cgccggcgct aggatctcgg 240

ggtctctcca catgaccatc cagaccgccg tcctcatcga gacc 284

<210> 1544
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1544

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gacctcgtct ggacgggagt acaaggtcaa ggatctctcg caggcggact tcggccgcct 120

cgagattgag ctggccgagg tcgaaatgcc cggcctcatg gcgtgccgcg ccgagttcgg 180

cccgtccaag cccttcgccg gcgctaggat ctcggggtct ctccacatga ncatccagac 240

cgccgtcctc atcgagaccc t 261

<210> 1545
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1545

ctctcgttcc atttccccat ctcccagatc caattcgcga gttctccctc ctctgcggcc 60

atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg gcgctaggat ctcggggtct 240

ctccacatga ccatccagac cgccgtcctc atcgagaccc 280

<210> 1546
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1546

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ctgccgccat gcgctctctg tggagaagac ctcgtctgga cgggagtaca aggtcaagga 120

tctctcgcag gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg 180

cctcatggcg tgccgcgccg agttcggccc gtccaagccc ttcgccggcg ctaggatctc 240

ggggtctctc cacatgacca tccagaccgc cgtcctcatc gagaccct 288

<210> 1547
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1547

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aagacctcgt ctggacggga gtacaaggtc aaggatctct cgcaggcgga cttcggccgc 120

ctcgagattg agctggccga ggtcgaaatg cccggcctca tggcgtgccg cgccgagttc 180

ggcccgtcca agcccttcgc cggcgctagg atctcggggt ctctccacat gaccatccag 240

accgcngtcc tcatcgagac 260

<210> 1548
<211> 212
<212> nucleic acid
<213> Zea mays

<400> 1548

tactggtggt gcaccgagcg ctgcctcgac tggggcgagg cgggcggcca cgacctcatc 60

gncgacgacg gcggcgacgc cacgctgctc atccacgagg gtgtcaaggc cgaggaggat 120

tacgagaaga ccggcaagat ccccgacccg gagtcanccg acaacgctga gttcaagatc 180

gtgctcacca tcatccgcga cgggctcaag gt 212

<210> 1549
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1549

cggacgntgg tagtggttgt gccgctgcac tncaagcagg ctggtgcccg tgtcattgng 60

nccgagatcg accccatctg cnccctccag gctctgatgg agggtcttca ggtccttccc 120

ttggaggacg ttgtctcgga agctgacatc ttcgtgacca ccactggcaa caaggatatc 180

atcatggttg accacatgag gaagatgaag aacaatgcca ttgtctgcaa cattggccat 240

ttgacaatga attgatatgc tcggccttga gacctac 277

<210> 1550

<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1550

ggtgcaccga gcgctgcctc gactggggcg angcgngcgg cnccgacctc atcgtcgacg 60

acggcngcga cgccacgctg ctcanccacg anggtgtcaa ggccgntggg gattacgagn 120

agaccggcna gatccccgac ccggngtnca ccgacaacgc tgagttcaag atcgtgctca 180

ccatcntccg ngacgggctn aacgctgacc ccaagaagta ccgcnaantg aangagangt 240

tgtaggcgtc tctgangaga ncacnacggg tgtnaag 277

<210> 1551
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1551

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gaagagctct ggcaagtatg agaagaaggt gtatgtgctc cccaagcacc ttgatgagaa 120

ggttgctgct ctccacttgg gcaagcttgg tgccaagctg accaagctca ccaagtctca 180

ggccgactac atcagcgtgc cgatcgaggg tccctacaag cctgcccact accggtacta 240

ggcacacggc ttgcagctca ctcgggccgt tgtgtgctat gaagttcgct a 291

<210> 1552
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1552

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atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg gcgctaggat ctcggggtct 240

ctccacatga ccatccagac cgccgtcctc atcg 274

<210> 1553

<211> 318
<212> nucleic acid
<213> Zea mays

<400> 1553

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ggagaagagc tctggcaagt atgagaagaa ggtgtatgtg ctccccaagc accttgatga 120

gaaggttgct gctctccact tgggcaagct tggtgccaag ctgaccaagc tcaccaagtc 180

tcaggccgac tacatcagcg tgccgatcga gggtccctaa caagcctgcc cactaccggt 240

actaggcagc cagcacacgg cttgcagctc actcgggcgt tgtgtgcaan nanttcgana 300

cngggcctgn aatnattt 318

<210> 1554
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 1554

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ctaaccaggt cattgcccaa cttgaactgt ggaaggagaa gagctctggc aagtatgaga 120

agaaggtgta tgtgctcccc aagcancttg atgagaaggt tgctgctctc cacttgggca 180

agcttggtgc caagctgacc aagttcacca agtctcaggc cg 222

<210> 1555
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1555

catttcccca tctcccagat ccaattcgcg agttctccct cctctgcggc catggcgctc 60

tctgtggaga agacctcgtc tggacgggag tacaaggtca aggatctctc gcaggcggac 120

ttcggccgcc tcgagattga gctggccgag gtcgaaatgc ccggcctcat ggcgtgccgc 180

gccgagttcg gcccgtccaa gcccttcgcc ggcgctagga tctcggggtc tctccacatg 240

accatccaga ccgccgtcc 259

<210> 1556

<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1556

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cgctctctgt ggagaagacc tcgtctggac gggagtacaa ggtcaaggat ctctcgcagg 120

cggacttcgg ccgcctcgag attgagctgg ccgaggtcga aatgcccggc ctcatggcgt 180

gccgcgccga gttcggcccg tccaagccct tcgccggcgc taggatctcg ggtctctcc 240

acatgaccat ccagaccgcc 260

<210> 1557
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1557

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ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc 120

tctcgcaggc ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc 180

tcatggcgtg ccgcgccgag ttcggcccgt ccaagccctt cgccggcgct aggatctcgg 240

ggtctctcca catgaccatc cagaccgccc c 271

<210> 1558
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1558

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cactttgaca atgaaattga tatgctcggc cttgagacct accctggcgt caagcgcatc 120

accatcaagc cccagactga ccgctgggtg ttccccgaga ccaacactgg catcattgtc 180

cttgctgagg gtcgcctgat gaacttgggt gtgctactgg cca 223

<210> 1559
<211> 293
<212> nucleic acid

<213> Zea mays

<400> 1559

cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgccgccat 60

ggcgctgctc tgtggagaag acctcgtctg gacgggagta caangtcaag gatctctcgc 120

aggcggactt cggccgcctc gagattgagc tggccgaggt cgaaatgccc ggcctcatgg 180

cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg cgctaggatc tcggggtctc 240

tccacatgac catccanacc gcngtcctca tcgagacctc accgcnttgg nnc 293

<210> 1560
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 1560

cccagatcca attcgcgagt tctccctcct ctgcggccat ggcgctctct gtggagaaga 60

cctcgtctgg acgggagtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gctaggatct cggggtctct ccacatgacc atccagaccg 240

ccgt 244

<210> 1561
<211> 358
<212> nucleic acid
<213> Zea mays

<400> 1561

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ggcnactgac gttatgatcg ncggaaaagc tgccgtngtc ttgcgaatan gtnntgtggg 120

caaggtggtg ttnttgccct caagaaggcn gtgcccgtgt canttgaccg agatcgaccc 180

catctgtgcc tccaggctct gatggagggt cttcaggtct tcccttggag gacgttgtct 240

ctgangtgac atcttcgtga ccaccactgg caaccaagga tatcncatgg ttgancacat 300

gagaagatga agaacaatgc cattgtctgc aacattggca cttgacaaga antgtatc 358

<210> 1562

<211> 218
<212> nucleic acid
<213> Zea mays

<400> 1562

gtcatgtcct gctcattcac taaccaggtc attgcctaac ttgaactgtg gaaggagaag 60

agctctggca agtatgagaa gaaggtgtat gtgctcccca agcaccttga tgagaaggtt 120

gctgctctcc acttgggcaa gcttggtgcc aagctgacca agctcaccaa gtctcaggcc 180

gactacatca gcgtgccgat cgagggtccc tacaagcc 218

<210> 1563
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1563

cctccctcac tctcgttcca tttccccatc tcccagatcc aattcgcgag ttctccctcc 60

tctgcggcca tggcgctctc tgtggagaag acctcgtctg gacgggagta caaggtcaag 120

gatctctcgc aggcggactt cggccgcctc gagattgagc tggccgaggt cgaaatgccc 180

ggcctcatgg cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg cgctaggatc 240

tcggggtctc tccacatgac catccagac 269

<210> 1564
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1564

ctctcgttcc atttccccat ctcccagatc caattcgcga gttctccctc ctctgcggcc 60

atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg gcgctaggat ctcggggtct 240

ctccacatga ccatccagac 260

<210> 1565
<211> 273
<212> nucleic acid

<213> Zea mays

<400> 1565

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tgctncattc cacgagggtg tcaaggccga ggaggactac gagaagaccg gcaagatccc 120

cgatccggag tccaccgaca acgctgagtt caagatcgtg ctcaccatca tccgcgacgg 180

gctcaaggct gaccccaaga agtaccgcaa gatgaaggag aggttgtcgg cntctctgag 240

gagaccacca cgggtgtcaa gaggctctac nat 273

<210> 1566
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1566

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atgagaagaa ggtgtatgtg ctccccaagc accttgatga gaaggttgct gctctccact 120

tgggcaagct tggtgccaag ctgaccaagc tcaccaagtc tcaggccgac tacatcagcg 180

tgccgatcga gggtccctac aagcctgccc actaccggta ctaggcagcc agcacacggc 240

ttgcagctca ctcgggccgt tgtgtgctat gaagttcgct ac 282

<210> 1567
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1567

ctcgcaggcg gacntcggcc gcctcgagat tgagcnggcc gaggtcgaaa tgcccggcct 60

catggcgtgg ccgcgccgag ttcggcccga ncaaagcnct tcgccggcgc taggatcncg 120

gggtctcncc acatgaccat ccagaccgcc gtcntcatcg agaccntcac ngcgctcggc 180

gccgaggtcc gtggtgcncc ngcaacatct tctccagcag gancacgccg ccgcc 235

<210> 1568
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 1568

cttcggccgc ctcgagattg agctggccga ggtcgaaatg cccggcctca tggcgtgccg 60

cgccgagttc ggcccgtcca agcccttcgc cggcgctagg atctcggggt ctctccacat 120

gaccatccag accgccgtcc tcatcgagac cctcaccgcg ctcggcgccg aggtcngctg 180

gtgctccgca acatctttca acgcaggaca aggcngcggc ggcatcggcg gattcggtg 239

<210> 1569
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 1569

gttccatttc cccatctccc agatccaatt cgcgagttct ccctcctctg cggccatggc 60

gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc 120

ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg 180

ccgcgccgag ttcggcccgt ccaagccctt cgccggcgct aggatctcgg ggtctctcca 240

catgaccatc 250

<210> 1570
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1570

ctccctcact cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct 60

ctgccgccat ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg 120

atctctcgca ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg 180

gcctcatggc gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct 240

cggggtctct ccacatgacc atcc 264

<210> 1571
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1571

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tgagaagaag gtgtatgtgc tccccaagca ccttgatgag aaggttgctg ctctccactt 120

gggcaagctt ggtgccaagc tgaccaagct caccaagtct caggccgact acatcagcgt 180

gccgatcgag ggtccctaca agcctgccca ctaccggtac taggcnacgg cttgcagctt 240

cactcgggcc gttgtgtgct atgaagttcg ctac 274

<210> 1572
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1572

tttccccatc tcccagatcc aattcgcgag ttctccctcc tctgccgcca tggcgctctc 60

tgtggagaag acctcgtctg gacgggagta cataggtcaa ggatctctcg caangcggga 120

cttcggccgc ctcgagattg agctggccga ggtcgaaatg cccggnctca tggcgtgccg 180

cgccgagttc ggcccgtcca ancccttcgc cggcgctaag atctcggggg ctctccacat 240

gaccatccag ancgncgtcc tcatcgagac cctcancgng ctnggggggg 289

<210> 1573
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1573

atcaagcccc agactgaccg ctgggtgttg atggtgatgc gcttgacgcc agggtaggtc 60

tcaaggccga gcatatcaat ttcattgtca aagtggccaa tgttgcagac aatggcattg 120

ttcttcatct tcctcatgtg gtcaaccatg atgatatcct tgttgccagt ggtggtcacg 180

aagatgtcag cttccgaggt caacggctcc aagctgtcgc ctgangagct cgtggtgctg 240

caggggtgcc cgtgcccgcc gtctaagctc cgcccg 276

<210> 1574
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1574

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tgcggccatg gcgctctctg tggagaagac ctcgtctgga cgggagtaca angtcaagga 120

tctctcgcag gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg 180

cctcatggcg tgccgcgccg agttcggccc gtccaagcnc ttcgccggcg taggattcgg 240

ggtctctcca catgaccatc cagaccgccg tctcatcgag acctcacgcg tcggcgccga 300

ggtcgtggtg 310

<210> 1575
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 1575

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gagaagacct cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc ggacttcggc 120

cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg ccgcgccgag 180

ttcggccccgt ccaagccctt cgccggcgct angatctcgg ggtctctcca catgacatcc 240

a 241

<210> 1576
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1576

ctttgtcatg tcctgctcat tcactaacca ggtcattgcc caccttgaac tgtggaagga 60

gaagagctct ggcaagtatg agaagaaggt gtatgtgctc cccaagcacc ttgatgagaa 120

ggttgctgct ctccacttgg gcaagcttgg tgccaagctg accaagctca ccaagtctca 180

ggccgactac atnccgcgtg ccgatcgagg gtccctacaa gcctgcccac ttaccggtat 240

aggcacacgg cttgcagctc actcgggccg ttgtgtgcta tgaattcgct acatggctg 299

<210> 1577
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1577

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gnctccctcc tctgcggcca nggcgctctc tgtggagaag acctcgtctg gacgggagta 120

caaggtcaag gatctctcgc aggcggactt cggccgcctc gagattgagc tggccnaggt 180

cgaaatgccc ggcctcatgg cgtgccgcgc cgagttcggc ccgtccaagc ccttcgccgg 240

cgctaggatc tcggggtctc tccacatgac ca 272

<210> 1578
<211> 179
<212> nucleic acid
<213> Zea mays

<400> 1578

ggagaccggc gccctcctct tccctgccat taacgtcaac gattccgtca ccaagagcaa 60

gtttgacaac ctgtatggtt gccgccactc actccctgat ggtctgatga gggccaccga 120

cgttatgatc gccggtaagg ttgccgtggt ctgcggatac ggtgatgttg gcaagggtt 179

<210> 1579
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1579

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tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcag gcggacttcg 120

gccgcctcga gattgagctg gccgaggtcg aaatgcccgg cctcatggcg tgccgcgccg 180

agttcggccc gtccaanccc ttngccggcg taggatctcg ggtcctcca catgaccatc 240

cagaccgcng tcntatcgag acctnacngn gttggngg 278

<210> 1580
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 1580

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gagaagacct cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc ggacttcggc 120

cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg ccgcgccgag 180

ttcggcccgt ccaagccttt cgccggcgta ggatctcggg gtctctccac atgaccatcc 240

aga 243

<210> 1581
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 1581

ctcgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgcggccat 60

ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atctctcgca 120

ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg gcctcatggc 180

gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggtctct 240

ccacatg 247

<210> 1582
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 1582

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gcgctctctg tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcag 120

gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg cctcatggcg 180

tgccgcgccg agttcggccc gtccaagccc ttcgccggcg ctaggatctc ggggtctctc 240

cacatg 246

<210> 1583
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1583

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tctgcggcca tggcgctctc tgtggagaag acctcgtctg gacgggagta caaggtcaag 120

gatctctcgc aggcggactt cggccgcctc gagantgagc cggccgaggg cgaaaanccc 180

ggcctcaagg cgtgccgcgc cgagtnggcc cgnccaagcc cttcgccggc gctaggatct 240

cggggtctct ccacatgacc atccagaccg ccgtcc 276

<210> 1584
<211> 178
<212> nucleic acid
<213> Zea mays

<400> 1584

attgtctgca acattggcca ctttgacaat gaaattgata tgctcggcct tgagacctac 60

cctggcgtca agcgcatcac catcaagccc cagactgacc gctgggtgtt ccccgagacc 120

aacactggca tcattgtcct tgctgagggt cgcctganga nccttgtgtg tactnntg 178

<210> 1585
<211> 175
<212> nucleic acid
<213> Zea mays

<400> 1585

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gangaccggc aagatccccg acccggagtc caccgacaac gctgagttca agatcgtgct 120

caccatcatc cgcgacgggc tcaaggctga ccccaagaag taccgcaaga tgaag 175

<210> 1586
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1586

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tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcag gcggacttcg 120

gccgcctcga gantgagctg gccgaggtcg aaatgcccgg cctcatggcg tgccgcgccg 180

agttcggccc gtccaagccc ttcgccggcg ctaggatctc ggggtctctc cacat 235

<210> 1587

<211> 180
<212> nucleic acid
<213> Zea mays

<400> 1587

ancaagtttg acaacctgta tggttgccgc nactcgctcc ctgatggtct gatgagggcc 60

actgacgtta tgatcgccgg aaaggttgcc gtggtctgcg gatacggtga tgtcgnnang 120

ggttgtgcng ctgcnctcaa gcaggctggt gcccgtgtna tcgtganccgn gatcgacccc 180

<210> 1588
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 1588

cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgccgccat 60

ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atctctcgca 120

ggcggacttc ggccgcctcg agattgagct ggccgaggtc gaaatgcccg gcctcatggc 180

gtgccgcgcc gagttcggcc cgtccaagcc cttcgccggc gctaggatct cggggt 236

<210> 1589
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1589

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atcatcatgg ttgaccacat gaggaagatg aagaacaatg ccattgtctg caacattggc 120

cacattgaca aagaaatgnt angcncgggc ccgnagaccn aacccggcgg caanngnanc 180

aacaacnagg cccagacgga ncgccggggg gnccccgaga ccaacacggn aacaagtcct 240

gncgaggggc gcccgangaa ccatnggggа gc 272

<210> 1590
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1590

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gccgccatgg cgctctctgt ggagaagacc tcgtctggac gggagtacaa ggtcaaggat 120

ctctcgcagg cggacttcgg ccgcctcgag attgagctgg ccgaggtcga aatgcccggc 180

ctcatggcgt gccgcgccga gttcggcccg tccaagccnt tcgccggcgc taggatctcg 240

ggggtctctc cacatganca 260

<210> 1591
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 1591

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ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggntc 120

tctcgcaggc ggacttcggc cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc 180

tcatggcgtg ccgcgccgag ttcggcccgt ccaagccctt cgccggcgct aggatctcgg 240

ggtct 245

<210> 1592
<211> 209
<212> nucleic acid
<213> Zea mays

<400> 1592

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cctcgtctgg acgggagtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gctaggatt 209

<210> 1593
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 1593

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gagaagacct cgtctggacg ggagtacaag gtcaaggatc tctcgcaggc ggacttcggc 120

cgcctcgaga ttgagctggc cgaggtcgaa atgcccggcc tcatggcgtg ccgcgccgag 180

ttcggcccgt cnaagccctt cgcnggcggt aaggntttgg g 221

<210> 1594
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1594

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atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaag cccttcgccg gcgcta 226

<210> 1595
<211> 149
<212> nucleic acid
<213> Zea mays

<400> 1595

ccctcgagga gtactggtgg tgcaccgagc gctgcctcga ctggggcgag gcgggcggcc 60

ccgacctcat cgtcgacgac ggcggcgacg ccacgctgct catccacgag ggtgtcaagg 120

ccgaggagga ttacgagaag accggcaag 149

<210> 1596
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1596

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catgggggct ctctgtggag aagacatcgt ctggacggga gtacaaggtc aaggatcnct 120

cgcaggcgga cntcggccgc ntcgagattg agcnggccga ggtcgaaatn acccggnctc 180

atggcgtncn gcgccgagtt cggcccgtcc aagcncttcg ccggcgctan gattcggggt 240

ctctaccaca tgaccatcca gacggcgtcc tcatcgagac atcacagcgt cggngccgag 300

t 301

<210> 1597
<211> 174
<212> nucleic acid
<213> Zea mays

<400> 1597

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tccccgaccc ngngtccacc gataacnctg nnttcaagat cgtggctcac catcatccgc 120

gacgggctca aggctgacnc caagaagtac cgcaagatga aggagnggct ngtt 174

<210> 1598
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 1598

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gccgccatgg cgctctctgt ggagaagacc tcgtctggac gggagtacaa ggtcaaggat 120

ctctcgcagg cggacttcgg ccgcctcgag attgagctgg ccgaggtcga aatgcccggn 180

ctcatggcgt gccgcgccga gttcggcccg tccaagccct tcgccggg 228

<210> 1599
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 1599

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cctcgtctgg acgggggtac aaggtcaagg atctctcgca ggcggacttc ggccgcctcg 120

agattgagct ggccgaggtc gaaatgcccg gcctcatggc gtgccgcgcc gagttcggcc 180

cgtccaagcc cttcgccggc gtaggatctc ggggtcctca natgaca 227

<210> 1600
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 1600

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gcgctctctg tggagaagac ctcgtctgga cgggagtaca aggtcaagga tctctcgcag 120

gcggacttcg gccgcctcga gattgagctg gccgaggtcg aaatgcccgg cctcatggcg 180

tgccgcgccg agttcggccc gtccaagcct tcgccggcgc taggatctcg gggttc 236

<210> 1601
<211> 209
<212> nucleic acid
<213> Zea mays

<400> 1601

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atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa ggatctctcg 120

caggcggact tcggccgcct cgagattgag ctggccgagg tcgaaatgcc cggcctcatg 180

gcgtgccgcg ccgagttcgg cccgtccaa 209

<210> 1602
<211> 426
<212> nucleic acid
<213> Zea mays

<400> 1602

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ccgccanggn gctctctgtg gagaagacct cntctggacg ggagtacaag gtcaaggatn 120

nctcgcaggn ggacttcggt cgccncgaga ttganctggc ngaggncgaa atgcccggcc 180

ncatggcntg ccgngccgan ttcggcccgt ctangccctt cgncggcgct aggntnacng 240

ngtctcacca catgaccatc naagactgtn ttcctcancg agaactnang gtacgacggt 300

accnaagtnc ccngatatcc gngnncnact tcccaacant tgaggaacct acantgcatt 360

tcnanngacc gnaccanaat tgncanatca aaggtaaatt aanncntagn ctncaanggg 420

naantg 426

<210> 1603
<211> 232
<212> nucleic acid

<213>   Zea mays

<400>   1603

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ggagaagacc tcgtctggac gggagtacaa ggtcaangat ctctcgcagg cggacttcgg 120

ccgcntcnat attgagctgg ccgaggtcga aatgcncggc ctcatagcgt gccgcgccga 180

tttcggnccg tcnaagccct tcgccgggng ctaggatctc ggggtctctc ca   232

<210>   1604
<211>   218
<212>   nucleic acid
<213>   Zea mays

<400>   1604

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ctgccgccat ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg 120

atcnctcgca ggcggacntc ggccgcctcg agantgagcn ggccgaggtc gaaatgcccg 180

gcctcatggc gtgccgcgcc gagttcggcc cgtccaag   218

<210>   1605
<211>   134
<212>   nucleic acid
<213>   Zea mays

<400>   1605

gccgccactc actccctgat ggtctgatga gggccaccga cgttatgatc gccggtaagg   60

ttgccgtggt ctgcggatac ggtgatgttg gcaagggttg tgccgctgca ctcaagcagg 120

ctggtgcccg tgtc   134

<210>   1606
<211>   152
<212>   nucleic acid
<213>   Zea mays

<400>   1606

cgccgtcctc atcgagaccc tcaccgcgct cggcgccgag gtccgctggt gctcctgcaa   60

catcttctcc acgcaggacc acgccgccgc cgcnatcgcg cgcgantcgg ccgccgtgtt 120

cgcctgnaaa gggggagacc cttgaggagt ag 152

<210> 1607
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1607

gtccaagtat gagaagaagg tgtatgtgct ccccaagcac cttgatgaga aggntgctgc 60

nnctcccact tgggcaagct tggtgccaag ctgaccaagc tcaccaagtc tcaggccgac 120

tacatcagcg tgccgatcga gggtccctac aagcctgccc actaccggta ctaggcagcc 180

agcacacggc ttgcagctca cttcgggccg ttgtgtgcta tnaagtncnc ncncactgnc 240

ctgtcagttc atcttttgca tgcatatgca ntatcatata cgcatcg 287

<210> 1608
<211> 123
<212> nucleic acid
<213> Zea mays

<400> 1608

tgtctctgaa gctgacatct tcgtgaccac cactggcaac aaggatatca tcatggttga 60

ccacatgagg aagatgaaga acaatgccat tgtctgcaac attggccact ttgacaatga 120

ant 123

<210> 1609
<211> 348
<212> nucleic acid
<213> Zea mays

<400> 1609

atcgccggaa aggttgccgn ggtctgcgga tacggtgatg tnnncaaggg ttgtgctgct 60

gccctcaagc aggctggtgc ccgtgtcatt gtgaccgaga tcgaccccat ctgtgcnctc 120

caggctctga tggagggctt caggtcttcc cttggaggac gtgtctctga agcnnacatc 180

tcgtgacaac attggcanca agtatcatca tggtgaccac atgaggaaga gaagacccat 240

gccatgtctg cacattggca ctttgacatg aattgatatc tcggcttgag actacctgng 300

tcaangctca catcagcccn gatgacgtgg tgtcccgaga canatgga 348

<210> 1610
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1610

atcaagcccc agactgaccg ctgggtgttg atggtgatgc gcttgacgcc agggnaggtc 60

tcaaggccga gcatatcaat ttccattgtc aaagtggcca atgttgcaga caatggccag 120

tggtcttcat ccttcctcat gtggtcaacc atgatgaata tccttgttgc cagtgggtgg 180

tcacgaagat gtcagctttc cggaggnaaa cggctccann ctgtcgctga gaanncgtgt 240

tgcngnaggg gtgcccgtgc cgcngc 266

<210> 1611
<211> 143
<212> nucleic acid
<213> Zea mays

<400> 1611

gcggatacgg tgatgtcggc aagggttgtg ctgctgcact caaacaggct ggtgcccgtg 60

tcattgtgac cgagatcnac cccatctgtn ccctccaggc tctgatggag ggtcttcagg 120

tcnttccctt ggagnacgtt ntt 143

<210> 1612
<211> 118
<212> nucleic acid
<213> Zea mays

<400> 1612

aacgattccg tcaccaagag caagtttgac aacctgtatg gttgccgcca ctcactccct 60

gatggtctga tgagggccac cgacgttatg atcgccggta aggttgccgt ggtctgcg 118

<210> 1613
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1613

ttctccctca ctcccgttcc atttccccat ctcccaganc caattcgcga gtnctccctc 60

ctctgccgcc atggcgctct ctgtggagaa gacctcgtct ggacgggagt acaaggtcaa 120

ggattctcgc aggcggactt cggccgcctc gagattgagt ggccgaggtc gaaatgccgg 180

ctcatggcgt gccgcggcga gttcggcccg tccaagcctt cggcggcgta agatctcggg 240

gtctttcaca tgaacatcag accgc 265

<210> 1614
<211> 111
<212> nucleic acid
<213> Zea mays

<400> 1614

catggttgac cacatgagga agatgaagaa caatgccatt gtctgcaaca ttggccactt 60

tgacaatgaa attgatatgc tcggccttga gacctaccct ggcgtcaagc g 111

<210> 1615
<211> 154
<212> nucleic acid
<213> Zea mays

<400> 1615

cncccagatc caattcgcga gtncncccnc ctctgccgcc atggcgctct ctgtggagaa 60

gacntcgtct ggacgggagt acaaggtcaa ggatctctcg caggcggacn tcggccgcct 120

cgagattgag cnggccgagg tcgaaatncc cggc 154

<210> 1616
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1616

cccagatcca attcgcgagt tctccctcct ctgccgccat ggcgctctct gtggagaaga 60

cctcgtcctg gaacgggagn acaaggtcaa ggntntntng naggngnant tnggcngcnt 120

cnanattnan ctggccnagg tcgaaatgcc cggcntnatg gcgtgcngcg ccganttcgg 180

cccgtccaag ccttcgccgg cgcnaggntc tcggggtctt cnacat 226

<210> 1617
<211> 229
<212> nucleic acid

<213> Zea mays

<400> 1617

ggatatcatc atggttgcca gtggtggtca cgaagatgtc agcttcagag acaacgtcct 60

ccaagggaag gacctgaaga ccctccatca gagcctggag ggcacagatg gggtcganct 120

cggtcacaag gntatcatcn ngggtgacca catgaggnag atgaagaaca atgccattgt 180

ctgcaacatt ggccactttg acaatgaaat tgatatgctc ggccttgag 229

<210> 1618
<211> 120
<212> nucleic acid
<213> Zea mays

<400> 1618

ctttgtcntg tcctgctcat tcactaacca ggtcattgcc caacttgaac tgtggangga 60

gaagagctct ggcnagtatg anaagaaggt gtatgtgctc cccaagcacc ttgatgagaa 120

<210> 1619
<211> 109
<212> nucleic acid
<213> Zea mays

<400> 1619

gtgccctcca ggctctgatg gagggtcttc aggtccttcc cttggaggac gttgtctctg 60

aagctgacat cttcgtgacc accactggca acaaggatat catcatggt 109

<210> 1620
<211> 96
<212> nucleic acid
<213> Zea mays

<400> 1620

ggttgaccac atgaggaaga tgaagaacaa tgccattgtc tgcaacattg gccactttga 60

caatgaaatt gatatgctcg gccttgagac ctaccc 96

<210> 1621
<211> 118
<212> nucleic acid
<213> Zea mays

<400> 1621

cgctgagttc aagatcgtgc tcaccatcat ccgcgacggg ctcnaggctg accccaagaa 60

gtnccgcaag atgaaggaga ngcttgtcgg cgtctctaag gagancancc angggtgt 118

<210> 1622
<211> 559
<212> nucleic acid
<213> Zea mays

<400> 1622

gnnnnnngnn tnncnagann nnttcncttt ccaacncctc ttgaatttcc gggtcgaccc 60

acgcgtccgc aacctgtatg gntgccgnca ctngatccct gatggtctga tgagggccac 120

tgaccgttat gntcgccgga aaggttgccg tggtctncgg atacngtgat ntcngcaagg 180

gttgtgctgc tgcaaatnaa gcanggctng tgcccgtntc attgtnaccc gagancnacn 240

natctgtncn nntacangct cttattngaa ggtctttang nccttcnctt ggaaganngt 300

ggctntgaag ctncatnttn ngaccaccac tgnnaacaag gatatnnnat ggttgaccac 360

atgangaana tgaagnacaa tgccattggc tgnaacattg ggccactttt gacaatgaan 420

ttgatatgct cnggccttga gacctaccct ggcgtcaaag cgcattatnc atcaaanccc 480

anactgaccg cttgggtgtt tccngagacc aaacactggc atcattggtc cttnctgaag 540

ggtcnnctgg ntnaacntt 559

<210> 1623
<211> 88
<212> nucleic acid
<213> Zea mays

<400> 1623

cgacaacgct gagttcaaga tcgtgctcac catcatccgc gacgggctca aggctgaccc 60

caagaagtac cgcaagatga aggagagg 88

<210> 1624
<211> 82
<212> nucleic acid
<213> Zea mays

<400> 1624

atcttctcca cgcaggacca cgccgccgcc gccatcgcgc gcgactcggc cgccgtgttc 60

gcctggaagg gggagaccct cg 82

<210> 1625
<211> 139
<212> nucleic acid
<213> Zea mays

<400> 1625

cctcactccc gttccatttc cccatctccc agatccaatt cgcgagttct ccctcctctg 60

ccgccatggc gctctctgtg gagaagacct cgtctggacg ggagtacaag gtcaaggatc 120

tctcgcangc ggacttcgg 139

<210> 1626
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1626

agcttggtgc caagctgacc aagctcacca agtctcaggc cgactacatc agcgtgccga 60

tcgagggtcc ctacaagcct gcccactacc ggtactaggc acacggcttg cagctcactc 120

gggccgttgt gtgctatgaa gttcgctaca ctggcctgtc agttatcttt tgcatgcata 180

tgcattatca tatacgcagt cgcgtanagg ttttcttatg gttatcgctt gancngnngn 240

gggagggaag gagct 255

<210> 1627
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 1627

acacngtccg ngacgctggg nactgtncng agaacgcgtn ggcggacgcg tgggtttccc 60

catatcccag atccanttcg cgagannctc cctcctangc ggccatgacg ctctctgtgg 120

agaagacctc gtctggacgg gagtacaagg tcaaggattc tcgcaggcgg acttcggccg 180

cctcgagatt gagtgccnag tgaatncccg gcnnntgggg gngc 224

<210> 1628

<211> 113
<212> nucleic acid
<213> Zea mays

<400> 1628

cccgttccat ttccccatct cccagatcca attcgcgagt tctccctcct ctgccgccat 60

ggcgctctct gtggagaaga cctcgtctgg acgggagtac aaggtcaagg atc 113

<210> 1629
<211> 182
<212> nucleic acid
<213> Zea mays

<400> 1629

tcctcgttcc atttccccat gctccnagat ccaattccgc gagtncctcc ctcctactgc 60

ggccatggcg ctactctgtg gagaagacct cgtctggacc gggagtacca aggtcaagga 120

tctctacgca ggcggacttc ggccgntcga gattgagctg gccgaggtcg aaatgcccgg 180

cc 182

<210> 1630
<211> 107
<212> nucleic acid
<213> Zea mays

<400> 1630

ttccatttcc ccatctccca gatccaattc gcgagttctc cctcctctgc ngccatggcg 60

ctctctgtgg agaagacctc gtctggacgg gagtacaaag ttaaagg 107

<210> 1631
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1631

aaaatggctt ctcaggtccc tcacgttccg cctcgtgctg ctactgtcct ctcggcgaca 60

gagctcatcg gaaatactcc tctcgttaga cttaacaaga tcccccagtc gctgggcatc 120

gagtgcgatg tctacgtcaa gccagagctg ttcagcgctg gaggcagtgt taaggacaga 180

attgctctgc gcatgattga agaggcagag aagagcggaa gaatcaagcc tggcgacact 240

cttatcgagc ctaccagtgg aaacactggt atcggtcttg ctc 283

<210> 1632
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1632

gngacgaggt gagggcgggg aggatgagct gctgctgccg cgtcgcgagg atggcgacgc 60

cgcggagggc gagagtggag tggtgatgcg ggtngccgtc gacgcgaanc gccagngtgg 120

gtgtaggcgc tcggatgctt ttctacccga cgctggtgta caacgtcgtg aggaatcggt 180

tcgagaagca cttccactgg tgggatcaga tcgatgagca tgtcctgctc ggtgctgttc 240

catccctagc gatgttctcc ggctaaaga 269

<210> 1633
<211> 125
<212> nucleic acid
<213> Zea mays

<400> 1633

tnctggacng attgtcacat ggatnacnga tcnnatgcat ggaaacacca tcaaggcccc 60

ttgtggcctg aagacnccgt ccatttgacn ncatncnggc tgaagtnccg tncctncttc 120

gatgt 125

<210> 1634
<211> 123
<212> nucleic acid
<213> Zea mays

<400> 1634

gtgctgttcg caatgctgga ttaattgtca catggattac tgatcctatg catggaaaca 60

ccatcaaggc cccttgtggc ctgaagactc gtccattcga ctcaattctg gctgaagtgc 120

gcg 123

<210> 1635
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 1635

cgcgtcgtng ctcggaattc ggctcgagct tggtttgcct cttgtagctt gagacttgag 60

gagaatggat accttcctgt tcacttctga gtcggtgaac gagggtcatc ccgacaagct 120

gtgtgatcag atatctgatg cagtgctcga tgcctgcctg gagcaagacc ctgaaagcaa 180

ggttgcctgt gagacatgca ccaagaccaa cttggtcatg gtatttggag agatcaccac 240

aaaagccaat atngactatg agaagattgt gcgcgatacg tgccgttcta taggatttgt 300

gtctggtgat gt 312

<210> 1636
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 1636

agatcgtgcg tgacacctgc aggaacatcg gcttcgtctc aaacgatgtg ggacttgatg 60

ctgacaactg caaggtcctt gtaaacattg agcagcagag ccctgatttg gccagggtgt 120

gcacggcaac ttaaccaaag acccgaggaa atcggtgtgg agaccagggt cactgtttgc 180

tatgcacgga cgagacccca gattgngcca tgagtcatgt ncttncaata aactcggtgt 240

cgtctaccga gntcgcaaga cggnacttcc cnggttgggc tatggaanac cna 293

<210> 1637
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 1637

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc aagacccaag tcactgttga 60

gtactacaat gacaagggtg ccatggttcc aatccgcgtc cacactgtgc ncatctccac 120

acagcatgat gagncctgtc acaaatgatg ngattgcagc tganctnaaa gaacacgtga 180

ttaagcntgt gattccngng nagtaccttg nngagccgac cnntggccng tngaaccctc 240

tggcaggttn gncttgnagg ccgcgtgggg atgctggnct caccggcc 288

<210> 1638
<211> 292
<212> nucleic acid

<213> Glycine max

<400> 1638

gngtacntaa gctcggaatt cggctcgagn taaantcggt gctcgtctca ncgaggttcg 60

caagaacggt acctgccctt ggntgaggcc tgntgggaag anccaagtga ntgttnccta 120

ttanaatgac aatggtgcca gggntcctat ncgngtacac acngtgctaa tntccacnca 180

acacgangan ncntgtccnc cantgacgan attgctgntg ncctcaaaga gcatgtgntc 240

aagnctgtgn ngcnagataa gtaccttgtt gnggagncca tttncnttgn nc 292

<210> 1639
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1639

tcgcangcac gcgtacgtaa gctcgggaat tcggctcgag ctgctgcata tggacacttt 60

ggaagagagg accctgactt cacatgggaa gtgatcaagc cactcaagtg ggaggaggcc 120

taaggccatt cattcctcac cgctgtgtgc tgggagtttt ttgagctttg cccttatcat 180

atctataatt tgtttcattt attttactta attcgtgtgt gcttctcact ttctctncct 240

cctctccatt ctattttgtt tcttctatcc tcatatgtaa ttttt 285

<210> 1640
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 1640

cgcatgcacg cgtacgtaag ctcggaattc ggctcgagga agattgtgcg cgatacgtgc 60

cgttctatag gatttgtgtc tggtgatgtt ggccttgatg ctgacaatgc aaggtattgg 120

tgtaccttga gcagcaaagt cctgacatag cacaaggagt ccatggccac ctcaccaagc 180

gaccagaaga cataggagct ggcgatcagg gtcacatgtt tggctacgcc acagatgaaa 240

cacctgagct tatgcctctc agccatgtcc ttgca 275

<210> 1641
<211> 317
<212> nucleic acid

<213> Glycine max

<400> 1641

ttcannantn gcatgcacgc gtacgtaagc tcngaattcn gctcganctc nagccgaatc 60

ggctcgagtg nagcttancc tcaagtagca tgagatcaan ccggtgatac cggacaanta 120

ncttgnntgn gaagnccatt ttccagttca acccctctgg ccgttttgtc attngaggtc 180

ctcaacngtg atgctcntct caccagccga caagatccat tcnnccgnta cttanggagg 240

cnggggtgct catngtggta gtgccttctc cgggaacgat cccaacaagg tttatangag 300

ttgtgttaca ntgtgag 317

<210> 1642
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1642

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctctacaa ttttttttta 60

atctttttga ttcgcttctg gctttttga ctctaaattg ggacgaaaag tcgagccttc 120

gaagaaacgc agaaactcat aaaccatcgc tgactccgca attttcgtcg gttcctcaca 180

cactctctga tttaancncg gtgccaagct caccgaggtt cggaagaacg ggacatgccc 240

ttggctgaga cctgatggca agacccaagt cactgttg 278

<210> 1643
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1643

gatctcaaga ggggtgggaa taacaggttc ttgaagactg ctgcatatgg acacttcggc 60

agagaggacc ctgacttcac atgggaagtg gtcaagcccc tcaagtggaa tgaatgggag 120

ttttttagcg ttgcccttat aatgtctntt atccataact ttccacgtcc cttgctctgt 180

gtttttctct cgtcgtcctc ctcctatntt gtttctccng cctttcattt gtaatttttt 240

acatgatcaa ctaaaaaat 259

<210> 1644

<211>	191
<212>	nucleic acid
<213>	Glycine max

<400>	1644

gcngcgtacg taagctcggn nttcggctcg aggagnattn tgacttcacg cctggaatga 60

tntccatcaa tcttgaccnc atganaanga gggaaacttc aggtanccag aagactgntg 120

cttatggaca ttttggaaga gatgatccgg atttcacatg ggagacagtg aagatactca 180

agcctngtgc t 191

<210>	1645
<211>	317
<212>	nucleic acid
<213>	Glycine max

<400>	1645

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg ttggtcttga tgctgacaac 60

tgcaaagttc tggtcaacat tgagcaacag agccctgata ttgctcaagg agttcacggt 120

catatgacca agaaacctga ggaaattggt gctggtgacc aaggccacat gtttggttat 180

gctacagacg aaacacctga gttaatgcca ctcactcatg tgcttgctac taaacttnnt 240

gccaggctca ctgaggtgag aaagaacaaa acatgcccct ggctgaggcc agatggtaaa 300

acccaagtga cattgag 317

<210>	1646
<211>	316
<212>	nucleic acid
<213>	Glycine max

<400>	1646

ttcgcangca cgcgtacgta agctcggaat tcggctcgag ngnactcact ggaaggaaga 60

tcattatcga cacctatggt ggttggggtg ctcatggtgg tggtgccttc tccggcaagg 120

acccaaccaa ggttgatagg agtggtgcat acattgttag gcaagcagcc aagagcgtgg 180

tagcttcagg gcttgcacga cgttgcattg tgcaggtttc ttatgcaatt ggagttccag 240

agccactttc tgtgtttgta gacacatacc aaacggggaa gattccagac aaggacatat 300

tggctctaat taagga 316

<210> 1647
<211> 332
<212> nucleic acid
<213> Glycine max

<400> 1647

ntntggntat gtcgcangca cgcntacgta agctcgggna ttcggctcga ggaccagggt 60

atcatgttcg gatatnccac cgacgagacc cccgagctcc ttcctctgac cgtcctcctc 120

tcccacaanc tgaactcggc catgaccaag gctcgcnagg attgtactct gccatggctg 180

cgacccgaca ccaagactca ggtcactgtc gagtacgccc acgatggcgg tgccgtcgtc 240

cctctccgtg ttgacaccgt cgtcgtctct gnccagcana ncgaggacat cactatcgag 300

aagctccgcg aggagatcaa ggagaagatc at 332

<210> 1648
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1648

gtcgcangca cncgtacgta agctcggaat tcggctcgag nggtgtgcac ggccacctta 60

ccaaaagacc cgangnaata tcaggnctct gctgctcaag gtccttgtaa acattgagca 120

gcagagccct gatattgccc agggtgtgca cggccacctt accaaaagac ccgaggaaat 180

cggtgctgga gaccagggtc acatgtttgg ctatgccact gtcgagaccc cagaattgat 240

gccattgagt catgttcttg caactaaact cggtgctcgt ctcaccgagg ttcgcaa 297

<210> 1649
<211> 348
<212> nucleic acid
<213> Glycine max

<400> 1649

gtctcnnnca cgcgtacgta agctcgagaa tcggctcgag ctngcagccn ggttactgtc 60

tgntnaagct anccatctct ntctctctnt cttaagnggn tccttngnna cannntagaa 120

tggcctnaga aattncctat tcacnctnna tcagtgaacg ngnggcancc tgcacaggnn 180

ctgtgaccag atctccgatg ctgtgntcng attcatgctt ggagcaggac cctgagagca 240

aggttgcctg tgaagcctgc aacaagacca acatggtggt ggttttcgga gagatcacaa 300

ccaaggccaa cgtggnctat ganaagattg tgcgggacac atgcaagg 348

<210> 1650
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 1650

ntcgcgtgca gcgtacgtaa gctcggaatt cggctcgagg cgagtgttct ttcttcgttt 60

caacaccttn ntttgcannc gntgcttctt ctcgcttgag anntggcaca agaaaccntt 120

ctatncacat ctgantctgt anacgagggt caccccggac aagctgtgcg nccagatctc 180

tgatggcagt gctcgatgcg tgcctgnacn ggaccctgag cagcgaggtt gcctgtnaga 240

catgcaccaa gaccngnntg gncatggtct ttggngagat cagnanccaa ggncagcagt 300

aggctatgag aannttnnnc gtga 324

<210> 1651
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 1651

tcacangcac gcgtacgtaa gctcggaatt cggctcgagg cagacttcac ctgggaagtt 60

gtgaagccac tcaagtcaga gaagcctcaa gcttaagagt gttgttaagt taatcactac 120

ccttcagtgg ntgtcttgct gggtgtggat gaataatttg cgtgtttcat gactactact 180

actactactc cnttcnntgt ctaatgccat ctcatcnatn nctaaactgn tcgntttntt 240

tttnctccnt atactcncaa tttgttgttt ggcnatgnaa tgtcactgtg ttgatgcatg 300

gaattttatc caaangaa 318

<210> 1652
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 1652

ncgcntgcac gcgtacgtaa gctcggaatt cngctcgagn ggctcgagcg cttgcctcga 60

acaggaccca gacagcaagg ttgcctgcga aacatgcacn aaaaccaact tggtcatggn 120

cttcggagaa atcacgacca aggccaatgt tgactacgag aagatagtgc gtgtacaccc 180

tgagcaatat cagggctctg ctgctcaatg ttgacgagga ccttgcagtt gtcggcatcc 240

agtcccacat cgtttgagac aaagccgatg ttcccgaata tcttgttgtt tggagcgatc 300

cgagaaaaac tc 312

<210> 1653
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1653

tcgntncant aanagtcgna ngcacgcgta cgtnagctcg gaattcggct cnnnctgtaa 60

nccgagggtc accccgacaa ncntgtgcga cnagatctct gatgcagtgc tcgatgcgtg 120

ccttgaacag gaccctgaca gcaaggttgc ctgtgagaca tgcaccaaga ccaacatggt 180

catggtcttt ggagagatca caaccagggc aangtanann ntgagaagan tgtccnggan 240

anangccgcg aaattggatt cnaccccgga nnanttgggt nnnnncnnna aaantnnngg 300

ntnggncaan nnttgnncnc 320

<210> 1654
<211> 506
<212> nucleic acid
<213> Glycine max

<400> 1654

ggntnnnnnn aactnttacg ctctcaggtg cccgtcanag aattnacggg tcgagccacg 60

cgtcagtacg gatgcgagaa gacgacagaa gggggcagcg cttgagacca agccccactc 120

aaccaacaca acactctctc tgctcctcct ctaactttca aagtttttta agtnnttaga 180

tggcagagac attcctaatt acctcaaagt cnctnaacga agganacctg acaagctctg 240

cgaacaaatn tccgatgctg tnctnnaanc ctgccttgaa caagacccaa acagcaaagt 300

tncctgccaa acatgcccca agaccaactt tgtcnangtc ctccgagaaa ttnccaccaa 360

gggcaacntt nactacgana anatnntgcg ttacacctgc nggaacatcg ggttcntctc 420

aaacgaagtt ggactttatg cctgacaaat gcaanggccc tnttaacaat ngnccancaa 480

aaccctgaaa ntnnccaagg gggttg 506

<210> 1655
<211> 501
<212> nucleic acid
<213> Glycine max

<400> 1655

ggnnnnnnnn nnnancttta actctccgcg ttcaggtaaa ggtttagaat tcccgggncg 60

acccacgcgt cnancccang cgtccgtacg gctgcgagag gangacagaa gggggcagcg 120

cttgagacca agccccactc aaccaccaca ccactctctc tgctcntctt ctatctttca 180

acgtttttna agtattaaga tggcataaac attcctattt acttcatant cagtnaanga 240

gggacacnct gacgtnctct gcgannanat ctcngattct gtcctcnacn cntgccttna 300

tnatgacnca cncancatcg ttgcttgnta natatacncc angaccaact tngtcntggt 360

cttcggagag atnnccatna tggcnaacgt tgactancat gaagatcntg cntnacacct 420

gcaagaattc ggattcgtct caaaccatgt tggganttat gctgannntg naaggttcnt 480

tgnaaacggt tgnccntttc a 501

<210> 1656
<211> 533
<212> nucleic acid
<213> Glycine max

<400> 1656

angggtgata ttntgtgtcn aaaggtatag tangtgntag attntcttcg gtttcggtat 60

taccnacnng acccacgcgt cccgcccacg cgtccggctg cgataagacg acagaanggg 120

atacctatgg tggctggggt gngggatggt ggaagtgcct tttgggggaa ngaccctacc 180

aaggttgaca gaagtggtgc ctatattgta aggcatgctg caaanagtgt ngtggcaaat 240

ggccttgcta naaggtgcat tgtgcaagtt tcctatncca ttggtgtccc tgaacccttg 300

tcanatgttt ntngacactt atngaactgn naanattcna nacaanngag attttnctat 360

anntatanga ataattttta nnttnananc tngnnnngtn tnncataaan nttngtaant 420

aaataagnnn naantntttt gtnnatttaa naaattntan tnttnnttta natagnnaaa 480

taatttttna agntnatttn nngtnnnttt nnaaattatg tannatatnt ctt 533

<210> 1657
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1657

tacttgtttc ngaatnaccg gcnggaccca cgcgtccgta cggctgcgag aagacgacag 60

aagggggtgg ctggggtgct catggtggag atgnggggtc aggnaaagac nnnggggggg 120

gttgacagaa ntggtgccta tattgtaagg cangctgcaa agantgncgt ggcaaatggc 180

cttgctagaa ngtgcattgt ncaagtttcc tatgcnattn gtgtncctaa nccntnntaa 240

atgttnttng atncnnattg aanttnnaan tanttcattn ataangataa tttanataat 300

taanaatnga ngaa 314

<210> 1658
<211> 557
<212> nucleic acid
<213> Glycine max

<400> 1658

gnnngggggg ngttttcggc cacgttgnac taggagactt cnttggaacg cccnggangn 60

ttcgggncga cccacgcgnc cggcnngccn canngaacca ccacacctct tntcgttttt 120

gctaccccnt tctgcnctac ggggaccggg naagttttaa nngggtaang atggcagaga 180

caatnnnatt taccnnagag tcggtgaacg agggacaccc tgacaagcnn tgcgaccaaa 240

tncccnatgc tgtcctcnac gcttgcctng agcaggaccc anacagcaaa gngtgnctgc 300

tgaaacatgc accaaaacca actnggncat gggcttggga gaaatnacaa ccaaggncac 360

ggcngactac gacaagatag nncagagaca cctgcangaa cntnggacnt cgnntnaaat 420

gaagtgngga nttggatgcc nnnaacttgc caagntccnn ngntaaccat tgtacaatna 480

tgatccccgg ngagttggtc naggcntaca agggnccacn ntntcnanaa ancnggantt 540

attngnnnnt tggtgnc 557

<210> 1659
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1659

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gnnactttcc tcttcacctc 60

agaatctgta aacgaaggcc atcccgacaa gctgtgtgac caggtttcag atgccatcct 120

agatgcatgc ttggagcaag acccagaaag caaggttgct tgcgagacct gtacaaaaac 180

taacatggtt atggtctttg gtgagattac aaccaaggcc agcgtgaact acgagaaaat 240

agttcgagac acttgcaaag gcattgggtt tgtgtcacca gatgt 285

<210> 1660
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 1660

cacgcgtacg taagctcgga attcggctcg agcttcctct tcgcacaaag cagcaagcat 60

ccttgagatg gaaactttcc tcttcacctc agaatctgta aacgaaggcc atcccgacaa 120

gctgtgtgac caggtttcag atgccatcct agatgcatgc ttggagcaag acccagaaag 180

caaggttgct tgcgagacct gtacaaaaac taacatggtt atggtctttg gtgagattac 240

aaccaaggcc agcgtgaact acgagaaaat agttcgagac acttgcaaag gcattgggtt 300

tgtg 304

<210> 1661
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1661

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ntccatcttc ttcttctctt 60

cctcttcgca caaagcagca agnatccttg agatggaaac tttcctnctt cacctcagaa 120

tctgtaaacg aaggccatcc cgacaagctg tgtgaccagg tttcagatgc catcctagat 180

gcatgcttgg agcaagaccc agaaagcaag gttgcttgcg agacctgtac aaaaactaac 240

atggttatgg tctttggtga gattacaacc aaggccagcg tga 283

<210> 1662
<211> 447
<212> nucleic acid

<213> Glycine max

<400> 1662

gagctggtga ccagggtcac atgtttgggt atgccaccga tgaaaccccc gagtacatgc 60

ccctcagcca tgtccttgca accaaacttg gtgctcgcct cacagaggtt aggaagaatg 120

gcacctgtgc ttggttgagg ccagatggta agacacaagt aaccgtcgag tactacaatg 180

acaatggtgc catggttcca gttcgtgtcc acactgtcct aatttccacc caacatgatg 240

agactgtgag caatgatcaa attgctgcgg accttaaaga gcatgttatc aagcctgtca 300

ttcctgagaa gtaccttgat gagaagacca tcttccacct taacccttct ggccgttttg 360

tcattggtgg ccctcatggt gatgctggtc tcactgggaa gaaagatnat cattgatacc 420

taaggtggct ggggtgctca aggtgga 447

<210> 1663
<211> 475
<212> nucleic acid
<213> Glycine max

<400> 1663

ccacgcgtcc gcacaaagcg ggttactgtc tgttcaagct accatctctc tctctctttc 60

ttagngcctc cttgccagaa gttaaaatgg cccaagaaac tttcctattc acatctgaat 120

cagtgaacga ggggcaccct gacaagctct gtgaccagat ctccgatgct gtgctcgatg 180

catgcttgga gcaggaccct gacagcaagg ttgcctgtga aacctgcacc aagaccaaca 240

tggtgatggt tttcggagag atcacaacca aggccaacgt ggactatgag aagattgtgc 300

gtgacacatg caggaacatt ggttttgtct ctgatgatgt tggtcttgat gctgacaact 360

gcaaggtcct cgtcaacatt gagcaacaga gtcctgatat tgctcaaggt gtgcacggnc 420

acctnacaaa gaggcctgag gagattggtg ctggtgacca aggtcatatg ttcgg 475

<210> 1664
<211> 520
<212> nucleic acid
<213> Glycine max

<400> 1664

gnngnnnnnn aggaggtnnt gntntggaan cnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn gagaagacga cagaaggggt 120

ctcaaatgat gtgggactgg atgccgacaa ctgcaaggtc ctcgtcaaca ttgagcagca 180

gagccctgat attgctcagg gtgtacacgg ccaccttacc aaaaaacctg aagaaattgg 240

tgctggtgac cagggtcaca tgtttggcta tgccactgat gaaacccctg aattgatgcc 300

attgagccat gttcttgcaa caaaactcgg tgctcgtctc accgaggttc gcaagaacgg 360

tacctgccct tggctgaggc ctgatgggaa gacccaagtg accgttgagt attacaatga 420

caatggtgcc agggttccta ttcgtgtaca caccgtgcta atctccaccc aacacgacga 480

gactgtcacc aatgaccaaa ttgntgntta acctnaaaaa 520

<210> 1665
<211> 494
<212> nucleic acid
<213> Glycine max

<400> 1665

ggngnnnnga atgatctagg tnntctatgc cgagacatga cgnaagancc acgngtacgt 60

aaactcggaa ttcggctcga gaacagcaca aagcgggtta ctgtctgttc aagctaccat 120

ctctctctct ctttcttagt gcctccttgc cagaagttaa aatggcccaa gaaactttcc 180

tattcacatc tgaatcagtg aacgaggggc accctgacaa gctctgtgac cagatctccg 240

atgctgtgct cgatgcatgc ttggagcagg accctgacag caaggttgcc tgtgaaacct 300

gcaccaagac caacatggtg atggttttcg gagagatnac aaccaaggcc aacgtggact 360

atgagaagat tgtgcgtgac acatgcagga acattggttt tgtctctgat gatgttggtc 420

ttgatgctga caactgcaag gtcctcgtca acattgagca acagagtcct gatattgctc 480

aaggtgtgca cngg 494

<210> 1666
<211> 502
<212> nucleic acid
<213> Glycine max

<400> 1666

gnagtgtttg ntntgggggg ggggagnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnaaagcgg gttactgtct 120

gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag ttaaaatggc 180

ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg acaagctctg 240

tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg acagcaaggt 300

tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcggagaga tcacaaccaa 360

ggccaacgtg gactatgaga agattgtgcg tgacacatgc aggaacattg ggttttgtct 420

ctgatgatgt tggtcttgat gctgacaact gcaaggtccc tcgtcaacat tgagcaacag 480

agtcctgata ttgctcaagg tg 502

<210> 1667
<211> 372
<212> nucleic acid
<213> Glycine max

<400> 1667

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcacctg 60

acaagctctg tgaccagatn tccgatgctg tgctcgatgc atgcttggag caggacctga 120

cagcaaggtt gcctgtgaaa cctgnaccaa gaccaacatg gtgatggttt tcggagagat 180

cacaaccaag gccaacgtgg actatgagaa gattgtgcgt gacacatgca ggaacattgg 240

ttttgtctct gatgatgttg gtcttgatgc tgacaactgc aagtcctcgt caacattgag 300

caacagagtc ctgatattgc tcaaggtgtg cacggccact cacaaagagg cctgaggaga 360

ttggtgtggt na 372

<210> 1668
<211> 487
<212> nucleic acid
<213> Glycine max

<400> 1668

tgaatttang ttgcctgccc aagagaatga agtcgcancc acgcgtacgt aaactcggaa 60

ttcggctcga ggtcggtgaa cgagggacac cctgacaagc tctgcgacca aatctccgat 120

gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcctg cgaaacatgc 180

accaaaacca acttggtcat ggtcttcgga gaaatcacga ccaaggccaa cgttgactac 240

gagaagatag tgcgtgacac ctgcaggaac atcggcttcg tctcaaatga tgtgggactg 300

gatgccgaca actgcaaggt cctccgtcaa cattgagcag cagagccctg atattgctca 360

aggtgtacac gggcaactta ccaaaaaacc tgaagaaatt ngtgctggtg accaaggtca 420

cattttgggt aatnccactg gntgnaaacc ccngnattta tgncccattg accnagttct 480

tnncaaa 487

<210> 1669
<211> 419
<212> nucleic acid
<213> Glycine max

<400> 1669

cgagcttgag cagacttaac aacagcacaa agcgggttac tgtctgttca agctaccatc 60

tctctctctc tttcttagtg cctccttgcc agaagttaaa atggcccaag aaactttcct 120

attcacatct gaatcagtga acgaggggca ccctgacaag ctctgtgacc agatctccga 180

tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct gtgaaacctg 240

caccaagacc aacatggtga tggttttcgg agagatcaca accaaggcca acgtggacta 300

tgagaagatt gtgcgtgaca catgcaggaa cattggtttt gtctctgatg atgttgggtc 360

ttgatgctga caactgcaag gtcctngtca acattgagca acagaatcct gatattgct 419

<210> 1670
<211> 447
<212> nucleic acid
<213> Glycine max

<400> 1670

nccacgcgtc cgagcgagtg ttctttnttc gtttcaacac cttaatttgc acacgctgnn 60

tcttcagcng gngaaatggc acangaaacc tttctattca catctgaatc tgnaaacgag 120

ggtcaccccg acaagctgtg cgaccagatc tctgatgcag ngctcgatgc gtgccttgaa 180

caggaccctg acagcaaggt tgcctgtgag acatgcacca agaccaacat ggtcatggtc 240

tttggagaga tcacaaccaa ggccaacgta gactatgaga agattgtccg tgacacatgc 300

cgngaaattg gattcatctc tgatgatgtt ggtcttgatg ctgacaaatg caaggngttg 360

gtcaacattg aacancaaan ccctgatatc nccagggngn gcacggncac ttcaccaacc 420

cccaaaagaa ggttnggctn ggnncca 447

<210> 1671
<211> 517
<212> nucleic acid
<213> Glycine max

<400> 1671

ggnnaggctt ngtcnncgan gggggatgta atggnaacct ctagaagact atgacgtcgc 60

atgcacgcgt acgtaagctc ggaattcggc tcgagcacca caccactctc tctgctcttc 120

ttctaccttt naagnnttta aagtattaag atggcagaga cattcctatt tacctcagag 180

tcagtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac 240

gcttgccttg aacaggaccc agacagcaag gttgcctgcg aaacatgcac caagaccaac 300

ttggtcatgg tcttcggaga gatcaccacc aaggccaacg ttgactaccg aagaagatcc 360

gtgcgtgaca cctgcaggaa catcggcttc gtctcaaacg atgtgggact tgatgctgac 420

aactgcaagg tccttgtaaa cattgagcag cagagccctg atattgccca gggtgtgcac 480

ggncacctta ccaaaagacc cgaggaaatc ggtgctg 517

<210> 1672
<211> 492
<212> nucleic acid
<213> Glycine max

<400> 1672

aactttaccc tccaggtngc ngtcaaagaa ttcacgggtc gacccacgcg tccgtacggc 60

tgcgaagaag acgacagaag gggcaccgc ttgagcagac ttaacaacag cacaaagcgg 120

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 180

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg 240

acaagctctg tgaccagatc tccgatgctg tgctcggtgc atgcttggag caggaccctg 300

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcggagaga 360

tcacaaccaa ggccaacgtg gactatgaga agattgtgcg tgacacatgc aggaacattg 420

gttttgtctc tgatgatgtt ggtcttgatg ctgacaactg caaaggtcct cgtcaacatt 480

gagcaacaaa at 492

<210> 1673

<211> 503
<212> nucleic acid
<213> Glycine max

<400> 1673

gngntgnngc aactcnactn nccaggcctg gtcacagaat naacgggccg anncacgcgt 60

cnaagaccaa agccccactc aaacaacaca ccaatctctc tgctcctcct cnaactttca 120

agtttttaaa gtnttaaaga tggcagagac attcctaatt nacctcagag tcagtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcnac gcttgccttg 240

aacaggaccc agacagcaan gttgcctgcg aaacatgcac caagaccaac ttggtcatgg 300

tcttcggaga gatnaccanc aaggccaacg ttgactacga gaagatngtg cgtgacacct 360

gcangaacat cggcttcgtc tcaaacgatg tgggacttga tgctgacaac tgcaaggtcc 420

ttgtaaacat tgagcaacaa aaccctgata ttgcccaagg tgtncacggc caacttacca 480

aaaganccga aggaaatcng tgc 503

<210> 1674
<211> 508
<212> nucleic acid
<213> Glycine max

<400> 1674

ggncnnnnga ntgatttagg ttcctangcc acanaaatgn aactgacctc gcncgcacgc 60

ntacgtaagc tcggaattcg gctcgaggtg gactatgaga agattgtgcg tgacacatgc 120

aggaacattg gttttgtctc tgatgatgtt ggtcttgatg ctgacaactg caaggtcctc 180

gtcaacattg agcaacagag tcctgatatt gctcaaggtg tgcacggcca cctcacaaag 240

aggcctgagg agattggtgc tggtgaccaa ggtcatatgt tcggctatgc cactgacgag 300

actcccgagc tcatgccctt gagccatgtc cttgccacga agctcggtgc caagctcanc 360

gacggtccgg aaaaacngga aatgcccttg ggctgaaaac ctgatggcaa nnaccaagtc 420

actgttgnnn tactacaatt gacaagggtt ccatggttcc aatccgcgtc aaaactgttg 480

ctcatntcca anacagcaat gatngaga 508

<210> 1675
<211> 334
<212> nucleic acid

<213> Glycine max

<400> 1675

gccttttcag ggaaggaccc taccaaggtt gacagnagtg gtgcctatat tgtaaggcag 60

gctgcaaaga gtgtcgtggc aaatggcctt gctagaaggt gcattgtgca agtttcctat 120

gccattggtg tccctgagcc cttgtcagtg tttgtggaca cttatggaac tgggaagatt 180

cctgacaagg agattctgca aattgtgaag gagaatttcg acttcagacc tggaatgatc 240

accattaact tggaccttaa gaggggtggt cataggttcc tcaagacagc tgcttatgga 300

cactttggaa gggatgatgc agacttcacc tggg 334

<210> 1676
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 1676

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggcaaggttg cctgtgaaac 60

ctgcaccaag accaacatgg tgatggtttt cggagagatc acaaccaagg ccaacgtgga 120

ctatganaag attgtgcgtg acacatgcag gaacattggt nttgtctctg atgatgttgg 180

tcttgatgct gacaactgca aggtcctcgt caacattgag caacagagtc ctgatattgc 240

tcaaggtgtg cacggccacc tcacaaagag gcctgnggag attggtgctg gtgaccaagg 300

tcatatgttc ggctatgcca ctgacgagac tcccg 335

<210> 1677
<211> 337
<212> nucleic acid
<213> Glycine max

<400> 1677

aaagatgcct gaggagattg gtgctggtga ccaaggtcat atgttcggct atgccactga 60

cgagactccc gatctcatnn cttgagccat gtccttgcca cgaagctcgg ngccaagctc 120

accgaggttc gnaagaacgg gacatgccct tggctgagac ctgatggcaa gacccaagtc 180

actgttgagt actacaatga caagggtgcc atggttccaa tccgcgtcca cactgtgctc 240

atctccacac agcatgatga gccctgtcac aaatgatgag attgcagctg atcttaaaga 300

acacgtgant aagcctgtga ttcctgagaa gtacctt 337

<210> 1678
<211> 448
<212> nucleic acid
<213> Glycine max

<400> 1678

ccacgcgtcc gcccacgcgt ccgcccacgc gtccggtgga cttgccagaa ggtgcattgt 60

gcaagtgtct tatgccattg gtgtgcctga gcctttgtct gtgtttgttg acacctatgg 120

cactgggaag atccatgata aggagattct caacattgtg aaggaaaact ttgatttcag 180

gcctggtatg atctccatca accttgatct caagaggggt ggaaataaca ggtttttgaa 240

gactgctgcc tatggacact ttggaagaga agaccctgac ttcacatggg aagtggtcaa 300

acccctcaag tgggagaagg cctaagtaat tcattccact gctctatgct ggaagttttt 360

tgagcgttgc ccttataata tgtctaatat ccataacttt ccacgtctct tactctgtgt 420

gtttctctcc tnttnctcta ttttggta 448

<210> 1679
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 1679

tgcangcgta cgtaagctcg gaattcggct cgagnctgct aagcagcatt gtggcaagtg 60

gacttgccag aaggtgcatt gtgcaagtgt cttatgccat tggtgtgcct gagcctttgt 120

ctgtgtttgt tgacacctat ggcactggga agatccatga taaggagatt ctcaacattg 180

tgaaggaaaa ctttgatttc aggcctggta tgatctccat caaccttgat ctcaagaggg 240

gtggaaataa caggtttttg aagactgctg cctatggaca ctttggaaga gaagaccctg 300

acttcacatg ggaagtggtc aaacccctca antggg 336

<210> 1680
<211> 493
<212> nucleic acid
<213> Glycine max

<400> 1680

gnnnnnnnga atgattngnt tcntgccnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn cccactcaac caccacacca ctctctctgc 120

tcttcttcta cctttcangt ttttacagta ttaagatggc agagacattc ctatttacct 180

cagagtcagt gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc 240

tcgacgcttg ccttgaacag gacccagaca gcaaggttgc ctgcgaaaca tgcaccaaga 300

ccaacttggt catggtcttc ggagagatca ccaccaaggc caacgttgac tacgagaaga 360

tcgtgcgtga cacctgcagg aacatcggct tcgtctcaaa cgatgtggga cttgatgctg 420

acaactgcaa ggtccttgtt aacattgagc aacaaaaccc tgataattgc caagggtttg 480

cacggccacc tta 493

<210> 1681
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 1681

agtcgatgca cgcgtacgta agctcggaat tcngctcgag ntgccgcgaa attggattca 60

tctctgatga tgttggtctt gatgctgaca aatgcaaggt gttggtcaac attgagcaac 120

agagcccgga tatcgcccag ggtgtgcacg gccacttcac caagcgccca gaggaggttg 180

gtgctggtga ccagggtcac atgtttgggt atgccaccga tgaaaccccc gagtacatgc 240

ccctcagcca tgtccttgca accaaacttg gtgctcgcct cacagaggtt aggaagaatg 300

gcacctgtgc ttggttgagg ccagatggta agacacaagt 340

<210> 1682
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1682

cgtnagctcg gaattcggct cgagctgtga ccagatctcc gatgctgtgc tcgatgcatg 60

cttggagcag gaccctgaca gcaaaggttg cctgtgaaac ctgcaccaag accaacatgg 120

tgatggtttt cggagagatc acaaccaagg ccaacgtgga ctatgagaag attgtgcgtg 180

acacatgcag gaacattggt tttgtctctg atgaanttgg tcttgatgct gacaactgca 240

aggtcctcgt caacattgag caacagagtc ctgatattgc tcaaggtgtg cacggccacc 300

tcacaaagag gcctgag 317

<210> 1683
<211> 406
<212> nucleic acid
<213> Glycine max

<400> 1683

gagaagacga cagaaggggg cagcgcttga gaccaagccc cactcaacca ccacaccact 60

ctctctgctc ttcttctacc tttcaagttt ttaaagtatt aagatggcag agacattcct 120

atttacctca gagtcagtga acgagggaca ccctgacaag ctctgcgacc aaatctccga 180

tgctgtcctc gacgcttgcc ttgaacagga cccagacagc aaggttgcct gcgaaacatg 240

caccaagacc aacttggtca tggtcttcgg agagatcacc accaaggcca acgttgacta 300

cgagaagatc gtgcgtgaca cctgcaggaa catcggcttc gtctcaaacg atgtgggact 360

tgatgctgac aactgcaagg tccttgttaa cattgagcaa caaaag 406

<210> 1684
<211> 489
<212> nucleic acid
<213> Glycine max

<400> 1684

actccaccgc gncggtaccg ttntaagncc ccgggccgac aaacgcgtca gtccggctgc 60

gagaagacga cagaaggggc accgcttgag cagacttaac aacagcacaa agcgggttac 120

tgtctgttca agctaccatc tctctctctc tttcttagtg ccttcttgcc agaagttaaa 180

atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag 240

ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcanga ccctgacagc 300

aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg agagatnaca 360

accaagggca acgtggacta tgagaagatt gtgcgtgaca catgcaagaa cattggtttt 420

gtctctgatg aagttggtcc tgatgctgac aactgcaang gtctcgttca acattgcagc 480

cancaagat 489

<210> 1685

<211> 506
<212> nucleic acid
<213> Glycine max

<400> 1685

gtggnnnngg gnnaactttn accngccang ggccggtana gaattaacgg ctcganccac 60

gcgtcaagta cggctgcnag aagacgacag aaggggatga aacccctgag tacatgcccc 120

tcagccatgt ccttgcaacc aaactcggtg ctcgcctcac cgaggttagg aaaaatggta 180

cctgtgcttg gctgaggcca gatggcaaga cacaagtaac tgttgagtac tacaatgaca 240

atggtgccat ggttccagtt cgtgtccaca ctgtcctaat ttccacccaa catgttgaga 300

ctgtgagcaa tgaccaaatt gctgctgacc ttaaagaaca tgttatcaag cctgtcattc 360

ctgagaagtn cctggatgag aagaccatct tccaacctta aaccttctgg gcgtttttgn 420

cnnttggtgg gccccnangg tganncccgg gcccanatgg gaaannaaag atttccccnt 480

ggaaacccan aggttggngn gggntc 506

<210> 1686
<211> 427
<212> nucleic acid
<213> Glycine max

<400> 1686

gaggccaggc aagccccact caaccaccac acctctcctc ggttcacgcc taccctttct 60

gctcttcttc nacctttcaa gttttaaaag tataaagatg gcanagacat tcctatttac 120

ctcagagtcg gtgaacgagg gacaccctga caagctctgc gaacaaatct ccgatgctgt 180

cctcgacgct tgcctcgagc aggacccana cagcaaagtt gcctgcgaaa catgcaccaa 240

aaccaacttg gtcatggtct tcggagaaat cacgaccaag gccaacgttg actacgagaa 300

gatagtgcgt gacacctgca ggaacatcgg cttcgtctca aatgatgtgg gactgggatg 360

ccgacaactg caaggtcctc gtcaacattg agcancagan ccctgatatt gcccanggtg 420

tacacgg 427

<210> 1687
<211> 504
<212> nucleic acid
<213> Glycine max

<400> 1687

ggnaactctt cgcggccaaa ctcttacann nccaggtagn gntanangaa ttcccggctc 60

gacccacgcg tnacgtacgg ctgcgagaag acgacagaag ggggcagcgc ttgagaccaa 120

gccccactca accaccacac cactctctct gctcttcttc tacctttcaa gtttttaaag 180

tattaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 240

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgccttgaac aggacccaga 300

cagcaaggtt gcctgcgaaa catgcaccaa gaccaacttg gtcatggtct tcggagagat 360

caccaccaag gccaacgttg actacganga gatcgtgcgt gacacctgca ggaacatcgg 420

cttcgtctca aacgatgtgg gacttgatgc tgacaactgc aaggtccttg taaacattga 480

agcagcagag ccctgatatt gccc 504

<210> 1688
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 1688

ncgnangcac gcgtacgtna gctcggaatt cggctcgagn ctgaatcngt gaacgagggg 60

caccctganc aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca 120

ggaccctgac agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt 180

cggagagatc acaaccaagg ccaacgtgga ctatgagaag attgtgcgtg acacatgcag 240

gaacattggt tttgtctctg atgatgttgg tcttgatgct gacaactgca aggtcctcnt 300

caacattgag caacagagtc ctg 323

<210> 1689
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 1689

tcggctcgag ngaccatctt ccaccttaac ccttctggcc gttttgtcat tggtggccct 60

catggtgatg ctggtctcac tggaagaaag atcatcattg atacctatgg tggctggggt 120

gctcatggtg gaggtgcctt ttcagggaag gaccctacca aggttgacag aagtggtgcc 180

tatattgtaa ggcaggctgc aaagagtgtc gtggcaaatg gccttgctag aaggtgcatt 240

gtgcaagttt cctatgccat tggtgtccct gagcccttgt cagtgtttgt ggacac 296

<210> 1690
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 1690

gcacgcgtac gtaagctcgg aattcggctc gagtatgaga agattgtccg tgacacatgc 60

cgcgaaattg gattcatctc tgatgatgtt ggtcttgatg ctgacaaatg caaggtgttg 120

gtcaacattg agcagcagag ccctgatatc gcccagggtg tgcacggtca cttcaccaag 180

cgcccagagg aggttggtgc tggtgaccag ggtcacatgt ttggctatgc cactgatgaa 240

acccctgagt acatgcccct cagccatgtc cttgcaacca aactcggtgc tcgcctcacc 300

gag 303

<210> 1691
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 1691

gncnatccaa agcgtacgta agctcggaat tcggctcgag ggaacatcgg cttcgtctca 60

aatgatgtgg gactggatgc cgacaactgc aaggtcctcg tcaacattga gcagcagagc 120

cctgncattg ctcagggtgt acacggccac cttaccaaaa aacctgaaga aattggtgct 180

ggtgaccagg gtcacatgtt tggctatgcc actgatgaaa cccctgaatt gatgccattg 240

agccatgttc ntgcaacaaa actcggtgct cgtctcaccg aggttcgcaa gaacggtacc 300

tgcccttggc tgaggcctga tgggaagacc caagtg 336

<210> 1692
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1692

tcgcatgcnc gcgtacgtna gctcggaatt cggctcgagg ttaaaatggc ccaaganact 60

ttcctattca catctgaatc agtgaacgag gggcaccctg acaagctctg tgaccagatc 120

tccgatgctg tgctcgatgc atgcttggag caggaccctg acagcaaggt tgcctgtgaa 180

acctgcacca agaccaacat ggtgatggtt ttcggagaga tcacaaccaa ggccaacgtg 240

gactatgaga agattgtgcg tgacacatgc aggaacattg gttttgtctc tgatgatgtt 300

ggtcttgatg ctga 314

<210> 1693
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 1693

gtcgcangca cgcgtacgta agctcggaat tcggctcgag tcattatcga tacttatgga 60

ggatggggtg ctcatggtgg tggtgctttc tccgggaagg accctaccaa ggttgatagg 120

agtggtgctt acattgtgag acaggctgct aagagcattg tggcaagtgg acttgccaga 180

aggtgcattg tgcaagtgtc ttatgccatt ggtgtgcctg agcctttgtc tgtgtttgtt 240

gacacctatg gcactgggaa gatccatgat aaggagattc tcaacattgt gaaggaaaac 300

tttgatttca ggcctggtat a 321

<210> 1694
<211> 514
<212> nucleic acid
<213> Glycine max

<400> 1694

gngnnnnagt ggntngtgna gtnnactnag nnaaattttg naccggtccg gaattcccgg 60

gtcgacccac gcgtccgtac gagaagacga cagaaggggg cagcgcttga tttgaggcca 120

ggcaagcccc actcaaccac cacacctctc ctcgttcacg ctacccccttt ctgctcttct 180

tctacctttc aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt 240

cggtgaacga gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg 300

cttgcctcga gcaggaccca gacagcaaag ttgcctgcga aacatgcacc aaaaccaact 360

tggtcatggt cttcggagaa atcacgacca aggccaacgt tgactacgag aagatagtgc 420

gtgacacctg caggaacatc ggcttcgtct caaatgatgt gggactggat gccgacaact 480

gcaaggtcct cgtcaacatt gagcagcaga ccct 514

<210> 1695
<211> 434
<212> nucleic acid
<213> Glycine max

<400> 1695

agagaccaag ccccactcaa ccaccacacc actctctctg ctcttcttcn acctttcaag 60

tttttaaagt attaagatgg cagagacatt cctatttacc tcagagtcag tgaacgaggg 120

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gccttgaaca 180

ggacccagac agcaaggttg cctgcgaaac atgcaccaag accaacttgg tcatggtctt 240

cggagagatc accaccaagg ccaacgttga ctacnagaag atcgtgcgtg acacctgcag 300

gaacatcggc ttcgtctcaa acgatgtggg acttgatgct gacaactgca aggtccttgg 360

naacnttgag caacaaaanc cctgataatt gccaaggtgt gcaagggcaa ctttacaaaa 420

agacccgang gaat 434

<210> 1696
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 1696

ttcgctgcac gcntacgtna gctcggnaat tcggntcgag ngcntacatt gtgagacagg 60

ctgctaagag cattgtggca agtggactag ccagaaggtg cattgtgcaa gtgtcttatg 120

ccattggtgt gncccgagcc tttgtctgtc tttgttgaca cctatggcac cgggaagatc 180

catgataagg agattctcaa cattgtgaag gagaactttg atttcaggcc cggtatgatc 240

tccatcaacc ttgatctcaa gaggggtggg aataacaggt tcttgaagac tgctgcatat 300

ggacacttcg gcagagagga ccctgact 328

<210> 1697
<211> 496
<212> nucleic acid
<213> Glycine max

<400> 1697

aactcttacg tngccaggnn ccggtanaga attaccgggg ncgacccacg cgtcngccca 60

cncgtccgcc cacgcgtccg acggctgcga gaagacgaca gaagggggc agcgcttgag 120

accaagcccc actcaaccac cacaccactc tctctgctct tcttctacct ttcaagtttt 180

taaagtatta agatggcaga gacattccta tttacctcag agtcagtgaa cgagggacac 240

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct tgaacaggac 300

ccagacagca aggttgcctg cgaaacatgc accaagacca acttggtcat ggtcttcgga 360

gagatnacca ccaaggccaa cgttgactac gagaagatcg tgcgtgacac ctgcaggaac 420

atcggcttcg tctcaaacga tgtgggactg atgctgacaa ctgcaaagtc cttgttaaca 480

atgaacanca aanccc 496

<210> 1698
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1698

cgcatgcacg cgtacgtnag ctcggaattc ggctcgaggg agtggtgcct acattgtgag 60

gcaagctgca aagagcattg ttgcaaatgg acttgctagg agggcaattg tgcaagtttc 120

ctatgccatt ggtgtgcctg agcccttgtc tgtgtttgtt gacacttatg gcactgggaa 180

gatccctgac aaggaaatcc tcagcattgt gaaggagagt tttgacttca ggcctggcat 240

gatctccatc aaccttgatc tcaagagggg tggaaatggc aggttcttga agactgctgc 300

<210> 1699
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 1699

acntnctgca cgcgtacgta agctcggaat tcggctcgag gtcatggtct ttggagagat 60

cacaaccaag gccaacgtag actatgagaa gattgtccgt gacacatgcc gcgaaattgg 120

attcatctct gatgatgttg gtcttgatgc tgacaaatgc aaggtgttgg tcaacattga 180

gcagcagagc cctgatatcg cccagggtgt gcacggtcac ttcaccaagc gcccagagga 240

ggttggtgct ggtgaccagg gtcacatgtt tggctatgcc actgatgaaa cccctgagta 300

cat 303

<210> 1700
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1700

ncgcnngcac gcntacgtna gctcggaatt cggctcgacg caccaagacc aacatggtga 60

tggttttcgg agagatcaca accaaggcca acgtggacta tgagaagatt gtgcgtgaca 120

catgcaggaa cattggtntt gtctctgatg atgttggtct tgatgctgac aactgcaagg 180

tcctcgtcaa cattgagcna cagagtcctg atattgctca aggtgtgcac gnccacctca 240

caaagaggcc tgaggagatt ggtgctggtg accaaggtca tatgttcggc tatgccactg 300

acgagactcc c 311

<210> 1701
<211> 425
<212> nucleic acid
<213> Glycine max

<400> 1701

gagtaacaac agcacaaagc gggttactgt ctgttcaagc taccatctct ctctctcttt 60

cttagtgcct ccttgccaga agttaaaatg gcccaagaaa ctttcctatt cacatctgaa 120

tcagtgaacg aggggcaccc tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat 180

gcatgcttgg agcaggaccc tgacagcaag gttgcctgtg aaacctgcac caagaccaac 240

atggtgatgg ttttcggaga gatcacaacc aaggccaacg tggactatga gaagattgtg 300

cgtgacacat gcaggaacat tggttttgtc ccgatgatgt ttggtcctga tgctgacaac 360

tgcaangtcc cccgtcaaca atgagcaaca nagtccctga aaattgcnca angngttgna 420

cgggc 425

<210> 1702
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 1702

tgcncgcgta cgtaagctcg gnatttnggc tcgaagcatt gtggcaagtg gactagccag 60

aaggtgcatt gtgcaagtnt cttatgccat tggtgtgccc gagcctttgt ctgtctttnt 120

tgacacctat ggcaccgggn agatccatga taaggagatt ctcnacattg tgaaggagaa 180

ctttgatttc aggcccggta tgatctccat caaccttgat ctcaagaggg gtgggnataa 240

caggttcttg aagactgctg catatggnca cttcggcaga gaggaccctg acttcacatg 300

ggaagtggtc nagcccctca a 321

<210> 1703
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1703

tcgcangcac gcntacgtaa gctcggaatt cggctcgagc ggctcgaggt agactatgag 60

aagattgtcc gtgacacatg ccgcgaaatt ggattcatct ctgatgatgt tggtcttgat 120

gctgacaaat gcaaggtgtt ggtcaacatt gagcagcaga gccctgatat cgcccagggt 180

gtgcacggtc acttcaccaa gcgcccagag gaggttggtg ctggtgacca gggtcacatg 240

tttggctatg ccactgatga aacccctgag tacatgcccc tcagccatgt ccttgcgccc 300

aaactcggtg n 311

<210> 1704
<211> 473
<212> nucleic acid
<213> Glycine max

<400> 1704

ttaacttgcn cgcgccaggt ancggtcaag gaattcccgg gtcgacccac gcgtccgacg 60

gctgcgagaa gacgacagaa gggggcagcg cttganacca agccccactc aaccaccaca 120

ccactctctc tgctcttctt ctacctttca agtttttaaa gtantaagat ggcagagaca 180

ttcctattta cctcanagtc agtgaacgag ggacaccctg acaagctctg cgaccaaatc 240

tccgatgctg tcctcgacgc ttgccttgaa caggacccag acagcaaggt tgcctgcgaa 300

acatgcacca ngaccanctt ggtcatgggt cttcggagag atcaccacca aggccaacgt 360

tgactacgag aagatcgtgc gtgacacctg caggaacatc ggcttcgtct caaacgatgt 420

gggacttgat gctgacaact gcaaggtcct tgtaaacatt gagcagcaga gcc 473

<210> 1705
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 1705

gcacgcgtac gtaagctcgg aattcggctc gagcaagtaa ctgttgagta ctacaatgac 60

aatggtgcca tggttccagt tcgtgtccac actgtcctaa tttccaccca acatgatgat 120

tctgtgagca atgaccaaat tgctgctgac cttaaagagc atgttatcaa gcctgtcatt 180

cctgagaagt acctggatga gaagaccatc ttccaacctt aacccttctg gccgttttgt 240

cattggtggc cctcatggtg atgctggtct cactggaaga aagatcatca ttgataccta 300

tggtgggtgg ggtgctcat 319

<210> 1706
<211> 507
<212> nucleic acid
<213> Glycine max

<400> 1706

gnnnnnnaan tctacgccgc ccctctaacg ngcacaanat tcncgggaac gacccacgcg 60

nccgtacggc tgcgaagaag acgacagaag ggggcagcgc ttgagancaa nccccactca 120

accaccacac cactctctct gctcttcttc nanctttcaa gtttttaaag tattaagatg 180

gcagagacat tcctatttac ctcagagtca gtgaacgagg gacaccctga caagctctgc 240

gaccaaatct ccgatgctgt cctcgacgct tgcctttaaa cangacccaa gacagcaaag 300

ttgcctgcga aacatgcacc aagaccaact tggtcatggt cttcggagag atnaccacca 360

agggcaacgt tgactacgag aagatcgtgc gtgacacctg caggaacatc ggcttcgtct 420

caaacgatgt gggacttgat gctgacaact gcaangtcct tgtaaacatt gagcaacaaa 480

accctganaa tncccaaggt ttcaccg 507

<210> 1707
<211> 351
<212> nucleic acid
<213> Glycine max

<400> 1707

cctttttcagg gaaggaccct accaaggttg acagaagtgg tgcctatatt gtaaggcagg 60

ctgcaaagag tgtcgtggca aatggccttg ctagaaggtg cattgtgcaa gtttcctatg 120

ccattggtgt ccctgagccc ttgtcagtgt ttgtggacac ttatggaact gggaagattc 180

ctgacaagga gattctgcaa attgtgaagg agaatttcga cttcagacct ggaatgatca 240

ccattaactt ggaccttaag aggggtggtc ataggttcct caagacagtg cttatggaca 300

ctttggaagg gatgatgcag cttcactggg aagtgtgaac cactcaagtc a 351

<210> 1708
<211> 509
<212> nucleic acid
<213> Glycine max

<400> 1708

ggngnnnnng gnnnnnnngn naacttttac gccngtccgt gccggtcana gaattcacgg 60

gncgacncac gcgtccnccc acgcgtccgc ccacgcgtcc gcccacgcgt ccgctgcgag 120

aagacgacag aagggggcag cgcttgagac caagccccac tcaaccacca caccactctc 180

tctgctcttc ttctaccttt caagttttta aagtattaag atggcagaga cattcctatt 240

tacctcagag tcagtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 300

tgtcctcgac gcttgccttg aacaggaccc agacagcaag gttgcctgcg aaacatgcac 360

caagaccaac ttggtcatgg tcttcggaga gatcaccacc aaggccaacg ttgactacga 420

gaagatcgtg cgtgacacct gcaggaacat cggcttcgtc tcaaacgatg tgggacttga 480

tgctgacaac tgcaaggtcc ttgtnaaca 509

<210> 1709
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1709

gagacaggct gctaagagca ttgtggcaag tggacttgcc agaaggtgca ttgtgcaagt 60

gtcttatgcc attggtgtgc ctgagccttt gtctgtgttt gttgacacct atggcactgg 120

gaagatccat gataaggaga ttctcaacat tgtgaaggaa aactttgatt tcaggcctgg 180

tatgatctcc atcaaccttg atctcaagag gggtggaaat aacaggtttt tgaagactgc 240

tgcctatgga cactttggaa gagaaga 267

<210> 1710
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1710

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggcagcaga gccctgatat 60

cgcccagggt gtgcacggtc acttcaccaa gcgcccagag gaggttggtg ctggtgaccn 120

cggtcacatg tttggctatg ccactgatga aacccctgag tacatgcccc tcagccatgt 180

ccttgcaacc aaactcggtg ctcgcctcac cgaggttagg aaaaatggta cctgtgcttg 240

gctgaggcca gatggcaaga cacaagtaac tgttgagtac tacaatgaca atggtgccat 300

ggttccagtt cgtgtccaca 320

<210> 1711
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 1711

nnnaaaannt gacntcgcan gcacgcgtac gtaagctcgg aattcggctc gagggactgg 60

atgccgacaa ctgcaaggtc ctcgtcaaca ttgagcagca gagccctgat attgctcagg 120

gtgtacacgg ccaccttacc aaaaaacctg aagaaattgg tgctggtgac cagggtcaca 180

tgtttggcta tgccactgat gaaacccctg aattgatgcc attgagccat gttcttgcaa 240

caaaactcgg tgctcgtctc accgaggttc gcaagaacgg tacctgccct tggctgaggc 300

ctgatgggaa gacccaagtg accgttgagt 330

<210> 1712
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1712

agtngcangc acgcgtacgt aagctcggaa ttcggctcga gtgcaagttt cctatgccat 60

tggtgtgcct gagcccttgt ctgtgtttgt tgacacttat ggcactggga agatccctga 120

caaggaaatc ctcagcattg tgaaggagag ttttgacttc aggcctggca tgatctccat 180

caaccttgat ctcaagaggg gtggaaatgg caggttcttg aagactgctg catatggaca 240

ctttggcaga gatgaccctg acttcacatg ggaagtggtg aagccactca agggggagaa 300

ggtacctgct tac 313

<210> 1713
<211> 486
<212> nucleic acid
<213> Glycine max

<400> 1713

gttaactttc ccgcgccngg tcangaataa acgggtcgan ccacgcgtcc gacggatgcg 60

agaagacgac agaaggggc agcgcttgat ttgaggccag gcaagcccca ctcaaccacc 120

acacctctcc tcgttcacgc taccccttc tgctcttctt ctacctttca agttttaaaa 180

gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag ggacaccctg 240

acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag caggacccag 300

acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc ttcggagaaa 360

tcacgaccaa ggccaacgtt gactacgaga agatagtgcg tgacacctgc angaacatcg 420

gcttcgtctc aaatgatgtg ggactggatg ccgacaactg caaggtcctc gtcaacattg 480

agcaac 486

<210> 1714
<211> 474
<212> nucleic acid
<213> Glycine max

<400> 1714

aactttacgc tgccangtnc cggtcanaga attnacgggg ccgacccacg cgtccntacg 60

gctgcgagaa gacgacagaa gggggcagcg cttgagacca agccccactc aaccaccaca 120

ccactctctc tgctcttctt ctacctttca agtttttaaa gtattaagat ggcagagaca 180

ttcctattta cctcagagtc agtgaacgag ggacaccctg acaagctctg cgaccaaatc 240

tccgatgctg tcctcgacgc ttgccttgaa caggacccag acagcaaggt tgcctgcgaa 300

acatgcacca agaccaactt ggtcatggtc ttcggagaga tcaccaccaa ggccaacgtt 360

gactacgana agatcgtgcg tgacacctgc aggaacatcg gcttcgtctc aaacgatgtg 420

ggacttgatg ctgacaactg caaaggtcct ttgtaaacat tgagcaacan agnc 474

<210> 1715
<211> 382
<212> nucleic acid
<213> Glycine max

<400> 1715

gtcgcangca cgcgtacgta agctcgggaa ttcgggctcg agcaacagca caaagcgggt 60

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 240

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cggagagatc 300

acaaccaagg ccaacgtgga ctatgagaag attgtgcgtg acacatgcag gaacattggt 360

tttgtctctg atgatgttgg tc 382

<210> 1716
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1716

nntcgcangc acgcgtacgt aagctcggaa ttcggctcga gggcaccctg nacaagctct 60

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 120

ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag atcacaacca 180

aggccaacgt ggactatgag aagattgtgc gtgacacatg caggaacatt ggttttgtct 240

ctgatgatgt tggtcttgat gctgacaact gcaaggtcct cgtcaacatt gagcaacaga 300

gtcctgat 308

<210> 1717
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 1717

gtcnnangca cgcgtacgta agctcggaat tcggctcgag ccagatctcc gatgctgtgc 60

tcgatgcatg cttggagcag gaccctgaca gcaaggttgc ctgtgaaacc tgcaccaaga 120

ccaacatggt gatggttttc ggagagnnca caaccaaggc caacgtggac tatgagaaga 180

ttgtgcgtga cacatgcagg aacattggtt ttgtcnctga tgatgttggt cttgatgctg 240

acaactgcaa ggtcctcgtc aacattgagc aacagagtcc tgatattgct caaggtgtgc 300

cggccacctc ac 312

<210> 1718
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1718

gtcgcangca cgcgtacgta agctcgggaa ttcggctcga ggcgctggtg accagggtca 60

catgtttggc tatgccactg atgaaacccc agaattcatg ccattgagtc atgttcttgc 120

aaccaagctc ggtgctcgtc tcaccgaggt tcgcaagaac ggaacctgcc catggctgag 180

gcctgatggg aagacccaag tgactgtgga gtattacaat gataatggtg ccagggttcc 240

agttcgtgtt cacaccgtgc taatctccac ccagcatgat gagactgtca ccaacgacga 300

aattgcggct gacct 315

<210> 1719
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 1719

ggaattcggc tcgagctgtt gagtactaca atgacaatgg tgccatggtt ccagttcgtg 60

tccacactgt cctaatttcc acacaacatn anaaggnngt gagcaatgac caaattgctg 120

ctgaccttaa agagcatgtt atcaagcctg tnantcctga gaagtacctg gatgagaaga 180

ccatcttcna ccttaaccct tctggccgtt ttgtcattgg tggccctcat ggtgatgctg 240

gtctcatgga agaaagatca tcattgatac ctatggtggg tggggtgctc atggtggagg 300

tgcttttcag gg 312

<210> 1720
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1720

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctcgagccga aactttccta 60

ttcacatctg aatcagtgaa cgaggggcac cctgacaagc tctgtgacca gatctccgat 120

gctgtgctcg atgcatgctt ggagcaggac cctgacagca aggttgcctg tgaaacctgc 180

accaagacca acatggtgat ggttttcgga gagatcacaa ccaaggccaa cgtggactat 240

gagaagattg tgcgtgacac atgcaggaca ttggttttgt ctctgatgat gttggtcttg 300

atgctgacaa t 311

<210> 1721
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 1721

gtcgcangca cgcnnncgtn nagctcggaa ttcggctcga gnacgagggn gcaccctgac 60

angctctgtg accagatctc cnatgctgtg ctcgatgcat gcttggagca ggaccctgac 120

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cggagagatc 180

acaaccaagg ccaacgtgga ctatgagaag attgtgcgtg acacatgcag gaacattggt 240

cttgtctctn atgatgttgg tcttgatgct gacaactgca agtcctcgtc aacantgagc 300

nacagagtcc tgatattnnt ccaggng 327

<210> 1722
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1722

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgagc aggaccctga cagcaaggtt 60

gcctgtgaga catgcaccaa gaccaacatg gtcatggtct tcggagagat cacaaccaag 120

gccaacgtag actatgaaaa gattgtccgc gacacatgcc gcgaaattgg attcatctct 180

gatgatgttg gtcttgatgc tgacaaatgc aaggtgttgg tcaacattga gcaacagagc 240

ccggatatcg cccagggtgt gcacggccat tcaccaagcg cccagaggag gttggtgccg 300

gtgaccag 308

<210> 1723
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1723

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggagaga tcacaaccaa ggccaacgtg gactatgaga agattgtgcg 240

tgacacatgc aggaacattg gtttgtctct gatgatgttg gtcctgatgc 290

<210> 1724
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 1724

tngcatgcac gcgtacgtaa gctcggaatt cggctcgagc aggacccaga cagcaaggtt 60

gcctgcgaac atgcaccaag accaacttgg tcatggtctt cggagagatc accaccaagg 120

ccaacgttga ctacgagaag atcgtgcgtg acacctgcag gaacatcggc ttcgtctcaa 180

acgatgtggg acttgatgct gacaactgca aggtccttgt aaacattgag cagcagagcc 240

ctgatattgc ccagggtgtg cacggccacc ttaccaaaag acccgaggaa atcggtgctg 300

gagaccaggg tcacatgttt ggcta 325

<210> 1725
<211> 486
<212> nucleic acid
<213> Glycine max

<400> 1725

ggnnnnnnnn nttnnnnngc ccttttacgc gccaaggtac cggtcaagga attcccggnt 60

cgacccacgc gtcngacggc tgcgagaaga cgacagaagg gggcagcgct tgagaccaag 120

ccccactcaa ccaccacacc actctctctg ctcttcttct acctttcaag tttttaaagt 180

attaagatgg cagagacatt cctatttacc tcagagtcag tgaacgaggg acaccctgac 240

aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gccttgaaca ggacccagac 300

agcaaggttg cctgcgaaac atgcaccaag accaacttgg tcatggtctt cggagagatc 360

accaccaagg ccaacgttga ctacgagaag atcgtgcgtg acacctgcag gaacatcggc 420

ttcgtctcaa acgatgtggg acttgatgct gacaactgca aggtcccttg taaacattga 480

nncagc 486

<210> 1726
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1726

cangcacncg tacgtnagct cggaattcgg ctcgagngca cggccacctc acaaagaggc 60

ctgaggagat tggtgctggt gaccaaggtc atatgttcgg ctatgccact gacgagactc 120

ccgagctcat gcccttgagc catgtccttg ccacgaagct cggtgccaag ctcaccgagg 180

ttcggaagaa cgggacatgc ccttggctga gacctgatgg caagacccaa gtcactgttg 240

agtactacaa tgacaagggt gccatggttc caatccgcgt ccacactgtg ctcatctcca 300

cacagcat 308

<210> 1727
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 1727

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gttttcggag agatcacaac 60

caaggccaac gtggactatg agaagattgt gcgtgacaca tgcaggaaca ttggttttgt 120

ctctgatgat gttggtcttg atgctgacaa ctgcaaggtc ctcgtcaaca ttgagcaaca 180

gagtcctgat attgctcaag gtgtgcacgg ccacctcaca aanaggcctg aggagattgg 240

tgctggtgac caaggtcata tgttcggcta tgccactgac gagactcccg agctcatgcc 300

cttgagc 307

<210> 1728
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1728

acgtcgcang cacgcgtacg taagctcgga attcggctcg agnaggctgc taagagcatt 60

gtngcaagtg gacttgccag aaggtgcatt gtgcaagtnt cttatgccat tggtgtgcct 120

gagcctttgt ctgtgtttgt tgacacctat ggcactgnna agatccatga taaggagatt 180

ctcaacattg tgaaggaaaa ctttgatttc aggcctggta tgatctccat caaccttgat 240

ctcaagaggg gtggaaataa caggtttttg aagactgctg cctatggaca ctttggaaga 300

gaagacctga ctt 313

<210> 1729
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1729

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gatggtcttc ggagagatca 60

caaccaaggc caacgtagac tatgaaaaga ttgtnccgcg acacatgccg cgaaattgga 120

ttcatctctg atgatgttgg tcttgatgct gacaaatgca aggtgttggt caacattgag 180

caacagagcc cggatatcgc ccagggtgtg cacggccact tgcaccaagc gcccagagga 240

ggttggtgct ggtgaccagg gtcacatgtt tgggtatgcc accgatgaaa cccccgagta 300

catgcccctc agccatgtcc 320

<210> 1730
<211> 361
<212> nucleic acid
<213> Glycine max

<400> 1730

gttaggttct gcacgctctg cttccagcga gtgttctttc ttcgtttcaa caccttaatt 60

tgcatnacgc tgctttcttn ngacntgagg aatgggcaca agaaaccttt tctattcaca 120

tctgaatctg taaacgaggg ttcaccccga caagctgtgc gaccagatct ctgatgcagt 180

gctcgatgcg tgccttgaac aggaccctga cagcaaggtt gcctgtgaga catgcaccaa 240

gaccaacatg gtcatggtct ttgggagaga tcacaaccaa ggccaacgta gactatgaga 300

agattgtccg tgacacatgc cgcgaaattg gattcatctc tgatgatgtt ggtcttgatg 360

c 361

<210> 1731
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 1731

gtcgcatgca cgcgtacgta agctcgggaa ttcggctcga gtgcatgctt gggagcagga 60

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 120

agtcnatcac aaccaaggcc aacgtggact atgagaagat tgtgcgtgac acatgcacga 180

acattggttt tgtctctgat gatgttggtc ttgatgctgn caactgcaag gtcctcgtca 240

acattgagca acagagtcct gatattgctc aaggtgtgca cggccacctc acaaagaggc 300

ctgaggagat tggtgctggt gaccaan 327

<210> 1732
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 1732

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gtaggagggc aattgtgcaa 60

gtttcctatg ccattggtgt gcctgagccc ttgtctgtgt ttgttgacac ttatggcact 120

gggaagatcc ctgacaagga aatcctcagc attgtgaagg agagttttga cttcaggcct 180

ggcatgatct ccatcaacct tgatctcaag aggggtggaa atggcaggtt cttgaagact 240

gctgcatatg ggacactttg gcagagatga ncctgacttc acatgggaag tggtgaagcc 300

act 303

<210> 1733
<211> 321
<212> nucleic acid

<213>   Glycine max

<400>   1733

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gattgatacc tatggtgggt 60

ggggtgctca tggtggaggt gccttttcag ggaaggaccc taaccaaggt tgacagaagt 120

ggtgcctata tcgtgaggca ggctgcaaag agtgttgtgg caaatggcct tgccagaagg 180

tgcattgtcc aagtttccta tgccattggt gtccctgagc ccttgtcagt gtttgtggac 240

acttatggaa ctgggaagat tcctgacaag gagattcttc aaattgtgaa ggagaatttc 300

gacttcagac ctggaatgat c 321

<210>   1734
<211>   310
<212>   nucleic acid
<213>   Glycine max

<400>   1734

gtcgcnngca cgcgtacgta agctcggaat tcggctcgag ggacgagacc ccagaattga 60

tgccattgag tcatgttctt gcaactaaac tcggtgctcg tctcaccgag gttcgcaaga 120

acggaacctg cccatggttg aggcctgatg ggaagaccca agtgactgtt gagtattaca 180

atgacaacgg tgccatggtt ccagttcgtg tccacactgt gcttatctcc acccaacatg 240

atgagactgt gaccaacgac gaaattgcag ctgacctcaa ggagcatgtg atcaagccgg 300

tgatcccgga 310

<210>   1735
<211>   288
<212>   nucleic acid
<213>   Glycine max

<400>   1735

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gtggtcatgg tctttggaga 60

gatcacaacc aaggccaacg tagactntga gaagattgtc cgtgacacat gccgcgaaat 120

tggattcatc tctgatgatg ttggtcttga tgctgacaaa tgcaaggtgt tggtcaacat 180

tgagcagcag agccctgata tcgcccaggg tgtgcacggt cacttcacca agcgcccaga 240

ggaggttggt gctggtgacc agggtcacat gtttggctat gccactga 288

<210> 1736
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1736

gtcgcangca cgcgtacgtn agctcggnnt tcggctcgag ntcagtgaac gaggggcacc 60

ctgacaagct ctgngaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 120

ctgacagcaa ggttgcctgt naaacctgca ccaagaccaa catggtgatg gttttcggag 180

agatcacaac caaggccaac gtggactatg agaagattgt gcgtgacaca tgcaggaaca 240

ttggttttgt ctctgatgat gttggtcttg atgctgacaa ctgcaaggtc ctcnncaan 299

<210> 1737
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 1737

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggcctgtcat tcctgagaag 60

taccttgatg agaagaccat cttccacctt aacccttctg gccgttttgt cattggtggc 120

cctcatggtg atgctggtct cactggaaga aagatcatca ttgataccta tggtggctgg 180

ggtgctcatg gtggaggtgc cttttcaggg aaggacccta ccaaggttga cagaagtggt 240

gcctatattg taaggcaggc tgcaaagagt gtcgtggcaa atggccttgc tagaaggtgc 300

ttgtgcaagt ttccctatgc catggtgc 328

<210> 1738
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1738

tcncgcgtac gtnagctcgg aattcggctc gagaccaaga ccaacatggt gatggttttc 60

ggagagatca caaccaaggc caacgtggac tatgagaaga ttgtgcgtga cacatgcagg 120

aacattggtt ttgtctctga tgatgttggt cttgatgctg acaactgcaa ggtcctcgtc 180

aacattgagc aacagagtcc tgatattgct caaggtgtgc acggccacct tcacaaagag 240

gcctgaggag attggtgctg gtgaccaagg tcatatgttc ggctatgccc actgacgaga 300

ctcccgagct cagcc 315

<210> 1739
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 1739

cccngcacgc gtacgtaagc tcggaattcg gctcgagcga tacttatgga ggatggggtg 60

ctcatggtgg tggtgctttc tccgggaagg accctaccaa ggttgatagg agtggtgctt 120

acattgtgag acaggctgct aagagcattg tggcaagtgg acttgccaga aggtgcattg 180

tgcaagtgtc ttatgccatt ggtgtgcctg agcctttgtc tgtgtttgtt gacacctatg 240

gcactgggaa gatccatgat aaggagattc tcaacattgt gaaggaaaac tttgattcag 300

gcc 303

<210> 1740
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1740

tctntgnanc gtagtaagct cggaattcgg ctcgagctga tattgcccag ggtgtgcacg 60

gccaccttac caaaagaccc gaggaaatcg gtgctggaga ccagggtcac atgtttggct 120

atgccacgga cgagacccca gaattgatgc cattgagtca tgttcttgca actaaactcg 180

gtgctcgtct caccgaggtt cgcaagaacg gaacctgccc atggttgagg cctgatggga 240

agacccaagt gactgttgag tattacaatg acaacggtgc catggttcca gttcgtgtc 299

<210> 1741
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1741

cattgagcaa cagagtcctg atattgctca aggtgtgcac ggccacctca caaagaggcc 60

tgaggagatt ggtgctggtg accaaggtca tatgttcggc tatgccactg acgagactcc 120

cgagctcatg cccttgagcc atgtccttgc cacgaagctc ggtgccaagc tcaccgaggt 180

tcggaagaac gggacatgcc cttggctgag acctgatggc aagacccaag tcactgttga 240

gtactacaat gacaagggtg cca 263

<210> 1742
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1742

gtngangcgt acgtaagctc ggaattcggc tcgaggcacg gccacctcac aaagaggcct 60

gaggagattg gtgctggtga ccaaggtcat atgttcggct atgccactga cgagactccc 120

gagctcatgc ccttgagcca tgtccttgcc acgaagctcg gtgccaagct caccgaggtt 180

cggaagaacg ggacatgccc ttggctgaga cctgatggca agacccaagt cactgttgag 240

tactacaatg acaagggtgc catggttcca atccgcgtcc acactgtgct catctccac 299

<210> 1743
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 1743

ctcaccgagg ttcgcaagaa cggtacctgc ccttggctga ggcctgatgg gaagacccaa 60

gtgaccgttg agtattacaa tgacaatggt gccagggttc ctattcgtgt acacaccgtg 120

ctaatctcca cccaacacga cgagactgtc accaatgacg aaattgctgc tgacctcaaa 180

gagcatgtga tcaagcctgt gatcccagag aagtaccttg atgagaagac cattttccac 240

ttgaaccctt cagg 254

<210> 1744
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1744

acagagtcct gatattgctc aaggtgtgca cggccacctc acaaagaggc ctgaggagat 60

tggtgctggt gaccaaggtc atatgttcgg ctatgccact gacgagactc ccgagctcat 120

gcccttgagc catgtccttg ccacgaagct cggtgccaag ctcaccgagg ttcggaagaa 180

cgggacatgc ccttggctga gacctgatgg caagacccaa gtcactgttg agtactacaa 240

tgacaagggt gccatggttc caatccgc 268

<210> 1745
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 1745

gcacgcgtac gtaagctcgg aattcggctc gagcacggac gagaccccag aattgatgcc 60

attgagtcat gttcttgcaa ctaaactcgg tgctcgtctc accgaggttc gcaagaacgg 120

aacctgccca tggttgaggc ctgatgggaa gacccaagtg actgttgagt attacaatga 180

caacggtgcc atggttccag ttcgtgncca cactgtgctt atctccaccc aacatgatga 240

gactgtgacc aacgacgaaa ttgcagctga cctcaaggag catgtgatca agccggtgat 300

cccgg 305

<210> 1746
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 1746

antcgcangc acgcgtacgt aagctcggaa ttcggctcga ggtcctcgac gcttgccttg 60

aacaggaccc agacagcaag gttgcctgcg aaacatgcac caagaccaac ttggtcatgg 120

tcttcggaga gatcaccacc aaggccaacg ttgactacga gaagatcgtg cgtgacacct 180

gcaggaacat cggcttcgtc tcaaacgatg tgggacttga tgctgacaac tgcaaggtcc 240

ttgtaaacat tgagcagcag agccctgata ttgcccaggg tgtgcacggc caccttacca 300

aaagacccga ggaaat 316

<210> 1747
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1747

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ctcaccggcc gcaagatcat 60

catcgacacc tatggaggat ggggtgcaca tggtggtggt gccttctctg ggaaggatcc 120

taccaaggtt gataggagtg gtgcctacat tgtgaggcaa gctgcaaaga gcattgttgc 180

aaatggactt gctaggaggg caattgtgca agtttcctat gccattggtg tgcctgagcc 240

cttgtctgtg tttgttgaca cttatggcac tgggaagatc cctgacaagg aaatcctcag 300

cattgt 306

<210> 1748
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1748

gtgcgtgaca catgcaggaa cattggtttt gtctctgatg atgttggtct tgatgctgac 60

aactgcaagg tcctcgtcaa cattgagcaa cagagtcctg atattgctca aggtgtgcac 120

ggccacctca caaagaggcc nnaggagatt ggtgctggtg accaaggtca tatgttcggc 180

tatgccactg acgagactcc cgagctcatg cccttgagcc atgtccttgc cacgaagctc 240

ggtgccaagc tcaccgaggt tcggaagaa 269

<210> 1749
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1749

tcgcangcac ncgtacgtaa gctcggaatt cggctcgaga cagagtcctg atattgctca 60

aggtgtgcac ggccacctca caaagaggcc tgaggagatt ggtgctggtg accaaggtca 120

tatgttcggc tatgccactg acgagactcc cgagctcatg cccttgagcc atgtccttcc 180

acgaagctcg gtgccaagct caccgaggtt cggaagaacg ggacatgccc ttggctgaga 240

cctgatggca agacccaagt cactgttgag tactacaatg acaagggtgc catggttcca 300

atccgcgtcc a 311

<210> 1750
<211> 308
<212> nucleic acid

<213> Glycine max

<400> 1750

gcangcacgc gtacgtaagc tcggaattcg gctcgangtt cttgcaacta aactcggtgc 60

tcgtctcacc gaggttcgca agaacggaac ctgcccatgg ttgaggcctg atgggaagac 120

ccaagtgact gttgagtatt acaatgacaa cggtgccatg gttccagttc gtgtccacac 180

tgtgcttatc tccacccaac atgatgagac tgtgaccaac gacgaaattg cagtgacctc 240

aaggagcatg tgatcaagcc ggtgatcccg gagaagtacc ttgatgagaa gaccattttc 300

cacttgaa 308

<210> 1751
<211> 394
<212> nucleic acid
<213> Glycine max

<400> 1751

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 60

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 120

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 180

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 240

gagagatcac aaccaaggcc aacgtggact atgagaagat tgtgcgtgac acatgcaagg 300

aacattggnt tttgtctctg atgaatgttg gncttgatgc tgacaactgc aaggnccccc 360

tcaaanattg gnncacaaaa ntccggaana ttgc 394

<210> 1752
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 1752

cangcacgcg tacgtaagct cggaattcgg ctcgagggac cctaccaagg ttgacagaag 60

tggtgcctat atcgtgaggc aggctgcaaa gagtgttgtg gcaaatggcc ttgccagaag 120

gtgcattgtc caagtttcct atgccattgg tgtccctgag cccttgtcag tgtttgtgga 180

cacttatgga actgggaaga ttcctgacaa ggagattctt caaattgtga aggagaattt 240

cgacttcaga cctggaatga tcaccattaa cttggacctt aagaggggtg gccataggtt 300

cctcaagaca gctgcttatg gacact 326

<210> 1753
<211> 536
<212> nucleic acid
<213> Glycine max

<400> 1753

gnnggngngt gnnttcntnn nnntntacnn tttggcntgc cgtaccggtc cggaattccc 60

gggtcgaccc acgcgtccgg caagccccac tcaaccacca cacctcttct cgttcacgct 120

accccttttct gctcttcttc tacctttcaa gttttaaaag tataaagatg gcagagacat 180

tcctatttac ctcagagtcg gtgaacgagg gacaccctga caagctctgc gaccaaatct 240

ccgatgctgt cctcgacgct tgcctcgagc aggacccaga cagcaaagtt gcctgcgaaa 300

catgcaccaa aaccaacttg gtcatggtct tcggagaaat cacgaccaag gccaacgttg 360

actacgagaa gatagtgcgt gacacctgca ggaacatcgg cttcgtctca aatgatgtgg 420

gactggatgc cgacaactgc aaggtcttgt caacattgac agcagaccct gatattggtc 480

aagggtggtc acgggcacct taccaaaaaa anctggaaga aattggggct tggnga 536

<210> 1754
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1754

cacgcgtacg taagctcgga attcggctcg agaccaaggt tgataggagt ggtgcttaca 60

ttgtgagaca ggctgctaag agcattgtgg caagtggact agccagaagg tgcattgtgc 120

aagtgtctta tgccattggt gtgcccgagc ctttgtctgt ctttgttgac acctatggca 180

ccgggaagat ccatgataag gagattctca acattgtgaa ggagaacttt gatttcaggc 240

ccggtatgat ctccatcaac cttgntctca agaggggtgg gaataa 286

<210> 1755
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 1755

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggagaga tcacaaccaa ggccaacgtg gactatgaga agattgtgcg 240

tgacacatgc aggaacattg gttttgtctc tgatga 276

<210> 1756
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1756

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggccaacgta gactatgaga 60

agattgtccg tgacacatgc cgcgaaattg gattcatctc tgatgatgtt ggtcttgatg 120

ctgacaaatg caaggtgttg gtcaacattg agcagcagag ccctgatatc gcccagggtg 180

tgcacggtca cttcaccaag cgcccagagg aggttggtgc tggtgaccag ggtcacatgt 240

ttgggctatg ccatgatgaa acccctgagt acatgcccct cagccatgtc cttgcaacca 300

<210> 1757
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 1757

nngtcgcang cacgcgtacg taagctcgga attcggctcg agccctgata tcgcccaggg 60

tgtgcacggt cacttcacca agcgcccaga ggaggttggt gctggtgacc agggtcacat 120

gtttggctat gccactgatg aaacccctga gtacatgccc ctcagccatg tccttgcaac 180

caaactcggt gctcgcctca ccgaggttag gaaaaatggt acctgtgctt ggctgaggcc 240

agatggcaag acacaagtaa ctgttgagta ctacaatgac aatggtgcca tggttccagt 300

tcgt 304

<210> 1758
<211> 309
<212> nucleic acid

<213> Glycine max

<400> 1758

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gctgcaaaga gcattgttgc 60

aaatggactt gctaggaggg caattgngca agtttcctat gccattggtg tgcctgagcc 120

cttgtctgtg tttgttgaca cttatgggca ctgggaagat ccctgacaag gaaatcctca 180

gcattgtgaa ggagagtttt gacttcaggc ctggcatgat ctccatcaac cttgatctca 240

agaggggtgg aaatggcagg ttcttgaaga ctgctgcata tggacacttt ggcagagatg 300

accctgact 309

<210> 1759
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1759

ncacgtcgan gcacgcgtac gtaagctcgg aattcggctc gaggagaaga ccatcttcca 60

ccttaaccct tctggccgtt ttgtcattgg tggccctcat ggtgatgctg gtctcactgg 120

aagaaagatc atcattgata cctatggtgg gtggggtgct catggtggag gtgccttttc 180

agggaaggac cctaccaagg ttgacagaag tggtgcctat atcgtgaggc aggctgcaaa 240

gagtgttgtg gcaaatggcc ttgccagaag gtgcatgtcc aagtttccta tgccattggt 300

gtccctgagc cctgtcagtg 320

<210> 1760
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 1760

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcgtgacaca tgcaggaaca 60

ttggttttgt ctctgatgat gttggtcttg atgctgacaa ctgcaaggtc ctcgtcaaca 120

ttgagcaaca gagtcctgat attgctcaag gtgtgcacgg ccacctcaca aagaggcctg 180

aggagattgg tgctggtgac caaggtcata tgttcggcta tgccactgac gagactcccg 240

agctcatgcc cttgagccat gtccttgcca cgaagctcgg tgccaagctc accgn 295

<210> 1761
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1761

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ngtcntangc acgcgtacgt aagctcggaa ttcggctcga gggtcaacat tgagcaacag    60

agcccggata tcgcccaggg tgtgcacggc cacttcacca agcgcccaga ggaggttggt   120

gctggtgacc agggtcacat gtttgggtat gccaccgatg aaaccccga gtacatgccc   180

ctcagccatg tccttgcaac caaacttggt gctcgcctca cagaggttag gaagaatggc   240

acctgtgctt ggttgaggcc agatggtaag acacaagtaa ccgtcgagta ctacaat      297
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<210> 1762
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1762

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tcgcatncac gcgtacgtaa gctcggaatt cggctcgagc atcattgata cctatggtgg    60

ctggggtgct catggtggag gtgccttttc agggaaggac cctaccaagg ttgacagaag   120

tggtgcctat attgtaaggc aggctgcaaa gagtgtcgtg gcaaatggcc ttgctagaag   180

gtgcattgtg caagtttcct atgccattgg tgtccctgag cccttgtcag tgtttgtgga   240

cacttatgga actgggaaga ttcctgacaa ggagattctg caaattgtga aggagaa      297
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<210> 1763
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 1763

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angangacgt cgctgcacgc gtacgtaagc tcggaattcg gctcgaggga agaacgggac    60

atgcccttgg ctgagacctg atggcaagac ccaagtcact gttgagtact acaatgacaa   120

gggtgccatg gttccaatcc gcgtccacac tgtgctcatc tccacacagc atgatgagnc   180

tgtcacaaat gatgagattg cagctgatct taaagaacac gtgattaagc ctgtgattcc   240

tgagaagtac cttgatgaga agaccatttt ccatttgaac ccttctggca ggtttgtcat   300
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tgg 303

<210> 1764
<211> 492
<212> nucleic acid
<213> Glycine max

<400> 1764

gggnaantct acgcgnncag ttctggtcag agccattccc gggnanaacc cacgcgnccn 60

tacggctgcg agaaagacga cagaaggggg caacgctttg attttgaggg caaggcaaag 120

ccccactcaa accaacacac ctctcctccg ttcacgctac cctttctgct cttcttctac 180

ctttcaagtt ttaaaaagta taaagatggc agagacattc ctatttacct cagagtcggt 240

gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg 300

cctcgagcag gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt 360

catggtcttc ggagaaatca cgaccaaggc caacgttgac tacgagaaga tagtgcgtga 420

cacctgcagg aacatcggct tcgtctcaaa tgatgtggga ctggatgccg acaactgcaa 480

aggtcctcgt ca 492

<210> 1765
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 1765

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggtgccttt tcagggaagg 60

accctaccaa ggttgacaga agtggtgcct atatcgtgag gcaggctgca aagagtgttg 120

tggcaaatgg ccttgccaga aggtgcattg tccaagtttc ctatgccatt ggtgtccctg 180

agcccttgtc agtgtttgtg gacacttatg gaactgggaa gattcctgac aaggagattc 240

ttcaaattgt gaaggagaat ttcgacttca gacctggaat gatcaccatt aactt 295

<210> 1766
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1766

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gaagctctgt gaccagatct 60

ccgatgctgt gctcgatgca tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa 120

cctgcaccaa gaccaacatg gtgatggttt tcggagagat cacaaccaag gccaacgtgg 180

actatgagaa gattgtgcgt gacacatgca ggaacattgg ttttgtctct gatgatgtta 240

ntcttgatgc tgacaactgc aaggtcctcg tcaacattga gcaacagagt 290

<210> 1767
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1767

nagtcnncng aacgcgtnng taagctcggt anttcggctc gangtgctca tggtggangn 60

gccttttcag ggaaggaccc taccaaggtt gacagaagtg gtgcctatat cgtgaggcag 120

gctgcaaaga gtgttgtggc aaatggcctt gccagaaggt gcattgtcca agtttcctat 180

gccattggtg tccctgagcc cttgtcagtg tttgtggaca cttatggaac tgggaagatt 240

cctgacaagg agattcttca aattgtgaag gagaatttcg acttcagacc tggaatgatc 300

<210> 1768
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 1768

gcagtgtacg tnagctcgga attcggctcg agcattggtg tgcctgagcc cttgtctgtg 60

tttgttgaca cttatggcac tgggaagatc cctgacaagg aaatcctcag cattgtgaag 120

gagagttttg acttcaggcc tggcatgatc tccatcaacc ttgatctcaa gaggggtgga 180

aatggcaggt tcttgaagac tgcngcatat ggacactttg gcagagatga ccctgacttc 240

acatgggaag tggtgaagcc actcaagggg gaaaaggtac tgcttaacta aaaggggttc 300

caacactctt ggccaangga ttttgcc 327

<210> 1769
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 1769

gcgtacgnaa gctcggaatt cggctcgaga atggacttgc taggagggca attgtgcagt 60

ttcctatgcc attggtgtgc ctgagccctt gtctgtgttt gttgacactt atggcactgg 120

gaagatccct gacaaggaaa tcctcagcat tgtgaaggag agttttgact tcaggcctgg 180

catgatctcc atnaaccttg atctcaagag gggtggaaat ggcaggttct tgaagactgc 240

tgcatatgga cactttggca gagatgaccc tgacttcaca tgggaagtgg tgaagccatc 300

aagggggaga agacctgctt aa 322

<210> 1770
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 1770

gnncgnncgn aagctcggaa ttcggctcga gngccaagct caccgaggtt cggaagaacg 60

ggacatgccc ttggctgaga cctgatggca agacccaagt cactgttgag tactacaatg 120

acaagggtgc catggttcca atccgcgtcc acactgtgct catctccaca cagcatgang 180

agnctgtcac aaatgatgag attgcagctg atcttaaaga acacgnnatt aagcctgtna 240

tnccnganaa gtnccttnat gagaagacca ttttccattt gaacccttc 289

<210> 1771
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1771

nnngcntnan gtagcgnacg taagctcgga attcggctcg agggaagaac gggacatgcc 60

cttggctgag acctgatggc aagacccaag tcactgttga gtactacaat gacaagggtg 120

ccatggttcc aatccgcgtc cacactgtgc tcatctccac acagcatgat gagactgtca 180

caaatgatga gattgcagct gatcttaaag aacacgtgat taagcctgtg attcctgaga 240

agtaccttga tgagaagacc attttccatt tgaacccttc tggcaggttt gtcattg 297

<210> 1772
<211> 260
<212> nucleic acid

<213>	Glycine max

<400>	1772

catgcaccaa gaccaacatg gtcatggtct ttggagagat cnntaccaag gccaacgtag 60

actatgagaa gattgtccgt gacacatgcc gcgaaattgg attcatctct gatgatgttg 120

gtcttgatgc tgacaatgca aggtgttggt caacattgag cagcagagcc ctgatatcgc 180

ccagggtgtg cacggtcact tcaccaagcg cccagaggag gttggtgctg gtgaccaggg 240

tcacatgttt ggctatgcca 260

<210>	1773
<211>	338
<212>	nucleic acid
<213>	Glycine max

<400>	1773

ccnnccccca cccncntacn aaagctcgga attcggctcg aggttcggct atgccactga 60

cgagactccc gagctcatgc ncttgagcca tgtccttgcc acgaagctnc ggtgccaagc 120

tcaccgaggt tcggaanaac gggacatgcc cttggctgag acctgatggc aagacccaag 180

tcactgttga gtactacaat gacaagggtg ccatggttcc aatccgcgtc cacactgtgc 240

tcatctccac acagcatgat gagactgtca caaatgatga gattgcagtg atcttaaaga 300

acacgtgatt aagcctgtga ttnctgagaa gtaccttg 338

<210>	1774
<211>	294
<212>	nucleic acid
<213>	Glycine max

<400>	1774

tngnangcac gcgtacgnaa gctcggaatt cggctcgaga actttcctat tcacatctga 60

atcagtgaac gaggggcacc ctgacaagct cctgtgacca gatctccgat gctgtgctcg 120

atgcatgctt ggagcaggac cctgacagca aggttgcctg tgaaacctgc accaagacca 180

acatggtgat ggttnccgga gagatcacaa ccaaggccaa cgtggactat gagaagattg 240

tgcgtgacac atgcaggaac attggttttg tctctgatga tgttggtctt gatg 294

<210>	1775

<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1775

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gacaagctgt gcgaccagat ctctgatgca gtgctcgatg ngtgcnttga acaggaccct 120

gacagcaagg ttgcntgtga gacatgcacc aagaccaaca tggtcatggt ctttggagag 180

atcacaacca aggccaacgt agactatgag aagattgtcc gtgacacatg ccgcgaaatt 240

gggattcatc tctggtggtg ttggtcttga tnctgacaat gcaaggtgnt ggtcaaacat 300

tgagcagcag agccctg 317

<210> 1776
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 1776

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gaccattttc catttgaacc 60

cttctggcag gtttgtcagc ggagggccgc atggcgatgc tggtctcacc ggccgcaaga 120

tcatcatcga cacctatgga ggatggggtg cacatggtgg tggtgccttc tctgggaagg 180

atcctaccaa ggttgatagg agtggtgcct acattgtgag gcaagctgca aagagcattg 240

ttgcaaatgg acttgctagg aggcaattgt gcaagtttcc tatgccattg gtgtgcctga 300

gcccttgtc 309

<210> 1777
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 1777

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcagggaccc agacagcaaa 60

gttgcctgcg aaacatgcac caaaaccaac ttggtcatgg tcttncggag aaatcacgac 120

caaggccaac gttgactacg agaagatagt gcgtgacacc tgcaggaaca tcggcttcgt 180

ctcaaatgat gtgggactgg atgccgacaa ctgcaaggtc ctcgtcaaca ttgagcagca 240

gagccctgat attgctcagg gtgtacacgg ccaccttacc aaaaaacctg aagaaattgg 300

tgctggtgac cagggtcaca tgtttggct 329

<210> 1778
<211> 518
<212> nucleic acid
<213> Glycine max

<400> 1778

gaggnnnnna gggntnntnn tatgaancna nggaactttt nngcntgccc gtaccggtcc 60

ggattcccgg gtcgacccac gcgtccgtac ggctgcggaa gacgacagaa gggggcagcg 120

cttgatttga ggccaggcaa gccccactca accaccacac ctctcctcgt tcacgctacc 180

cctttctgct cttcttctac ctttcaagtt ttaaaagtat aaagatggca gagacattcc 240

tatttacctc agagtcggtg aacgagggac accctgacaa gctctgcgac caaatctccg 300

atgctgtcct cgacgcttgc ctcgagcagg acccagacag caaagttgcc tgcgaaacat 360

gcaccaaaac caacttggtc atggtcttcg gagaaatcac gaccaaggcc aacgttgact 420

acgagaagat agtgcgtgac acctgcagga acatcggctt cgtctcaaat gatgtgggac 480

tggatgcccg acaactgcaa ggtcctcgtn acattgac 518

<210> 1779
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 1779

gtcgcangca cgcgtacgta agctcggaat tcngctcgag ntgagcaatg accaaattgc 60

tgctgacctt aaagagcatg ttattaagcc tgtcattcct gagaagtacc tggatgagaa 120

gaccatcttc caccttaacc cttctggccg ttttgtcatt ggtggccctc atggtgatgc 180

tggtctcact ggaagaaaga tcatcattga tacctatggt gggtggggtg ctcatggtgg 240

aggtgccttt tcagggaagg accctaccaa ggttgacaga agtggtgcct ata 293

<210> 1780
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1780

cgagggacac cctgataagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct 60

cgaacaggac ccagacagca aggttgcctg cgaaacatgc accaagacca acttggtcat 120

ggtcttcgga gagatcacca ccaaggccaa cgttgcatac gagaagatcg tgcgtgacac 180

ctgcaggagc atcggcttca tctcanacga tgtgggactt gatgctgaca actgcaaggt 240

ccttgtnaac attgagcagc ngagccctg 269

<210> 1781
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1781

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagg tggggtgctc atggtggagg 60

tgccttttca gggaaggacc ctaccaaggt tgacagaagt ggtgcctata tcgtgaggca 120

ggctgcaaag agtgttgtgg caaatggcct tgccagaagg tgcattgtcc aagtttccta 180

tgccattggt gtccctgagc ccttgtcagt gtttgtggac acttatggaa ctgggaagat 240

tcctgacaag gagattcttc aaattgtgaa ggagaatttc gacttca 287

<210> 1782
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 1782

cgcngcacgc gtacgtnagc tcggaattcg gctcgaggca cggccacctc acaaagaggc 60

ctgaggagat tggtgctggt gaccaaggtc atatgttcgg ctatgccact gacgagactc 120

ccgagctcat gcccttgagc catgtccttg ccacgaagct cggtgccaag ctcaccgngg 180

ttcggaanaa cgggacatgn ccttggctga nacctgatgg caagacncaa gtcactgttg 240

agtactacaa tgacaagggt gccatggttc caatccgcgt ccacactgtg ctcatctcca 300

c 301

<210> 1783
<211> 305
<212> nucleic acid

<213> Glycine max

<400> 1783

nagtcgcang cacgcgtacg taagctcgga attcggctcg agccagaatt catgccattg 60

agtcatgttc ttgcaaccaa gctcggtgct cgtctcaccg aggttcgcaa gaacggaacc 120

tgcccatggc tgaggcctga tgggaagacc caagtgactg tggagtatta caatgataat 180

ggtgccaggg ttccagttcg tgtncacacc gtgctaatct ccacccagca tgatgagact 240

gtcaccaacg acgaaattgc ggctgacctc aaggagcatg tgatcaagcc tgtgatcccg 300

gagaa 305

<210> 1784
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1784

gtcgctgcac gcgtacgtna gctcggaatt cggctcgagt gatgatgttg gtcttgatgc 60

tgacaaatgc aaggtgttgg tcaacattga gcagcagagc cctgatatcg cccagggtgt 120

gcacggtcac ttcaccaagc gcccagagga ggttggtgct ggtgaccagg gtcacatgtt 180

tggctatgcc actgatgaaa cccctgagta catgcccctc agccatgtcc ttgcaaccaa 240

actcggtgct cgcctcaccg aggttaggaa aaatggtacc tgtgctt 287

<210> 1785
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 1785

nancacgtcg cangcacgcg tacgtaagct cgggaattcg gctcgagagg gtcacatgtt 60

tggctatgcc actgatgaaa cccctgagta catgcccctc agccatgtcc ttgcaaccaa 120

actcggtgct cgcctcaccg aggttaggaa aaatggtacc tgtgcttggc tgaggccaga 180

tggcaagaca caagtaactg ttgagtacta caatgacaat ggtgccatgg ttccagttcg 240

tgtccacact gtcctaattt ccacccaaca tgatgagnct gtgagcaatn accaaattgc 300

tgctgacctt 310

<210> 1786
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1786

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ntcacaacca aggccaacgt 60

agactatgaa aagattgtcc gcgacacatg ccgcgaaatt ggattcatct ctgatgatgt 120

tggtcttgat gctgacaaat gcaaggtgtt ggtcaacatt gagcaacaga gcccggatat 180

cgcccagggt gtgcacggcc acttcaccaa gcgcccagag gaggttggtg ctggtgacca 240

gggtcacatg tttgggtatg ccaccgatga aaccccсgag tacatgc 287

<210> 1787
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 1787

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtcttgatgc tgacaactgc 60

aaggtcctcg tcaacattga gcaacagagt cctgatattg ctcaaggtgt gcacggccac 120

ctcacaaaga ggcctgagga gattggtgct ggtgaccaag gtcatatgtt cggctatgcc 180

actgacgaga ctcccgagct catgcccttg agccatgtcc ttgccacgaa gctcggtgcc 240

aagctcaccg aggttcggaa gaacgggaca tgcccttggc tgagacctga tggca 295

<210> 1788
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 1788

tcgcacgcac gcgtacgtaa gctcggaatt cggctcgagn agatggcaga gacattccta 60

tttacctcag antcggtgaa cgagggacac cctgacaagc tctgcgacca aatctccgat 120

gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcctg cgaaacatgc 180

accaaaacca acttggtcat ggtcttcgga gaaatcacga ccaaggccaa cgttgactac 240

gagaagatag tgcgtgacac ctgcaggaac atcggcttcg tctcaaatga ngtgggactg 300

gatgccgaca actgcaagtc t 321

<210> 1789
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1789

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggagaga tcacaaccaa ggccaacgtg gactatgaga agattgtgcg 240

tgacacatgc aggaacattg gttttgtctc 270

<210> 1790
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 1790

tngatanacg cgtacgtnag ctcggaattc ggctcgaggg aggttggtgc tggtgaccag 60

ggtcacatgt ttgggctatg ccactgatga aacccctgag tacatgcccc tcagccatgt 120

cttgcaacca aactcggtgc tcncctcacc gaggttagga aaaatggtac ctgtgcttgg 180

ctgaggccag atggcaagac acaagtaact gttgagtact acaatgacaa tggtgccatg 240

gttccagttc gtgtccacat gtcctaattt ccacccaaca tgatgagcct gtgagcaatg 300

accaaattgc tgctgacctt aaagagcatg tta 333

<210> 1791
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1791

caatggtgcc atggttccag ttcgtgtcca cactgtccta atttccaccc aacatgatga 60

nacctgtgag caatgaccaa attgctgctg accttaaaga gcatgttatc aagcctgtca 120

ttcctgagaa gtacctggat gagaagacca tcttccacct taacccttct ggccgttttg 180

tcattggtgg ccctcatggt gatgctggtc tcactggaag aaagatcatc attgatacct 240

atggtgggtg gggtgctcat ggtggag 267

<210> 1792
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1792

ccanaatcgc atgcacgcgt acgtaagctc ggaattcngc tcgagctcga gccgctcgag 60

ccggaatcag tgaacgaggg gcaccctgac aagctctgtg accagatcct ccgatgctgt 120

gctcgatgca tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa cctgcaccaa 180

gaccaacatg gtgatggttt tcggagagat cacaaccaag gccaacgtgg actatgagaa 240

gattgtgcgt gacacatgca ggaacattgg ttttgtctct gatgatgttn gtcttgatgc 300

tgacaactgc aagt 314

<210> 1793
<211> 512
<212> nucleic acid
<213> Glycine max

<400> 1793

gnnnnnaatt ctacgccgnn ctctaacgcg nnaacanaat tcccggaaac gacccacgng 60

nccnntgcga gaagacgaca gaagggggca acgcttnagc agacttnaca acancacaaa 120

gcnggttact gtctgttcaa gctaacatct ccctctctct ttccttaant gcctccttnc 180

caagaaagtt aaaatggccc aagaaacttt cctattcaca tctgaatcaa gttaacgaag 240

gggcaccccc gacaagctct gtgaccaaga tctccgatgc tgtgctcgat gcatgcttgg 300

agcaagaccc tgacagcaan gttgcctgtg aaacctgcac caagaccaac atggtgatgg 360

ttttcggaga gattacaacc aangccaacg tggactatga gaagattgtg cgttacacat 420

gcangaacat tggttttgtc tctgaagatg ttggtcctga agctgacaac tgcaangtcc 480

tcgtcaacaa ttaacaacaa naattctgat at 512

<210> 1794
<211> 294
<212> nucleic acid

<213> Glycine max

<400> 1794

nnngntctan gcacgcgtac gtaagctcgg aattcggctc gaggaccatc ttccacctta 60

acccttctgg ccgttttgtc attggtggcc ctcatggtga tgctggtctc actggaagaa 120

agatcatcat tgatacctat ggtggctggg gtgctcatgg tggaggtgcc ttttcaggga 180

aggaccctac caaggttgac agaagtggtg cctatattgt aaggcaggct gcaaagagtg 240

tcgtggcaaa tggccttgct agaaggtgca ttgtgcaagt ttcctatgcc attg 294

<210> 1795
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 1795

cgannacgtc gcangcacgc gtacgtaagc tcggaattcg gctcgaggga cgagacccca 60

gaattgatgc cattgagtca tgttcttgca actaaactcg gtgctcgtct caccgaggtt 120

cgcaagaacg gaacctgccc atggttgagg cctgatggga agacccaagt gactgttgag 180

tattacaatg acaacggtgc catggttcca gttcgtgtcc acactgtgct tatctccacc 240

caacatgatg agactgtgac caacgacgaa attgcagctg acctcaagga gcatgtgatc 300

a 301

<210> 1796
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 1796

gcatgcacgc gtacgtaagc tcggaattcg gctcgagagt ggtgcctaca ttgtgaggca 60

agctgcaaag agcattgttg caaatggact tgctaggagg gcaattgtgc aagtttccta 120

tgccattggt gtgcctgagc ccttgtctgt gtttgttgac acttatggca ctgggaagat 180

ccctgacaag gaaatcctca gcattgtgaa ggagagtttt gacttcaggc ctggcatgat 240

ctccatcaac cttgatctca agaggggtgg aaatggc 277

<210> 1797

<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1797

gcangcacgc nnacgtnagc tcggaattcg gctcgagacc ctaccaaggt tgacagaagt 60

ggngcctata tcgtgaggca ggctgcaaag agtgttgtgg canatggcct tgccagaagg 120

tgcattgtcc aagtttccta tgccattggt gtccctgagc ccttgtcagt gtttgtggac 180

acttatggaa ctgggaagat tcctgncaag gagattcttc aaattgtgaa ggagaatttc 240

gacttnagac ctggaatgat caccattaac ttggacctta agaggggtgg ccatagg 297

<210> 1798
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1798

agagcccgga tatcgcccag ggtgtgcacg gccacttcac caagcgccca gaggaggttg 60

gtgctggtga ccagggtcac atgtttgggt atgncaccga tgaaaccccc gagtacatgc 120

ccctcagcca tgtccttgca accaaacttg gtgctcgcct cacagaggtt aggaagaatg 180

gcacctgtgc ttggttgagg ccagatggta agacacaagt aaccgtcgag tactacaatg 240

acaatggtgc catggttcca ttcg 264

<210> 1799
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1799

nagtcgcang cacgcgtacg taagctcgga attcggctcg agccagaatt catgccattg 60

agtcatgttc ttgcaaccaa gctcggtgct cgtctcaccg aggttcgcaa gaacggaacc 120

tgcccatggc tgaggcctga tgggaagacc caagtgactg tggagtatta caatgataat 180

ggtgccaggg ttccagttcg tgtncacacc gtgctaatct ccacccagca tgatgagact 240

gtcaccaacg acgaaattgc ggctgacctc aaggagcatg tgatnaagcc tgtgatcccg 300

gngaagtnct t 311

<210> 1800
<211> 508
<212> nucleic acid
<213> Glycine max

<400> 1800

ttttgtntnc cgaggccccn acnancntcn tggcctcgng nccacgcgta ngtaaantcg 60

gaattcggct cgagatttga ggccaggcaa gccccactca accaccacac ctctcctcgt 120

tcacgctacc cctttctgct cttcttctac ctttcaagtt ttaaaagtat aaagatggca 180

gagacattcc tatttacctc agagtcggtg aacgagggac accctgacaa gctctgcgac 240

caaatctccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag caaagttgcc 300

tgcgaaacat gcaccaaaac caacttggtc atggtcttcg gagaaatcac gaccaaggcc 360

aacgttgact acganaagat agtgcgtgac anctgcaaga acatcggctt cntctcaaat 420

gatgtgggac tggatgccga caactgcaag gtcctccgtc aacantgaac aacaagaacc 480

ctgatattgc ncaagggttt naaccggc 508

<210> 1801
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 1801

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ccctaccaag gttgacagaa 60

gtggtgccta tatcgtgagg caggctgcaa agagtgttgt ggcaaatggc cttgccagaa 120

ggtgcattgt ccaagtttcc tatgccattg gtgtccctga gcccttgtca gtgtttgtgg 180

acacttatgg aactgggaag attcctgaca aggagattct tcaaattgtg aaggagaatt 240

tcgacttcag acctggaatg atcaccatta acttggacct taagaggggt gg 292

<210> 1802
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1802

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gctcgagccg cgcccagagg 60

aggttggtgc tggtgaccag ggtcacatgt ttggctatgc cactgatgaa acccctgagt 120

acatgcccct cagccatgtc cttgcaacca aactcggtgc tcgcctcacc gaggttagga 180

aaaatggtac ctgtgcttgg ctgaggccag atggcaagac acaagtaact gttgagtact 240

acaatgacaa tggtgccatg gttccagttc gtgtccacac tgtcctaatt tccacccaac 300

atgatc 306

<210> 1803
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 1803

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agctccgatg ctgtgctcga 60

tgcatgcttg gagcaggacc ctgacagcaa ggttgcttgt gaaacctggc accaagacca 120

acatggtgat ggttttcgga gagatcacaa ccaaggccaa cgtggactat gagaagattg 180

tgcgtgacac atgcaggaac attggtttta nctctgatga tgttggtctt gatgctgaca 240

actgcaaggt cctcgtcaac attgagcaac agagtcctga tattgctcaa ggtgtgcacg 300

gccacctca 309

<210> 1804
<211> 437
<212> nucleic acid
<213> Glycine max

<400> 1804

gagaagacga cagaaggggg cancgcttga tttnaggcca ggcangcccc actcanccac 60

cacacctctc ctcnttcacg ctaccccttt ctgctcttct tctanctttc aagttttaaa 120

agtataaaga tggcagagan attcntattt acctcagagt cggtgaacga gggacacccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcna gcaggancca 240

nacagcaaaa ttgcctgcna aacatgcacc aaaaccaact tggtcatggt cttcggagan 300

atcacgacca aggccaacgt tgactacgag aagatagtgc gtgacacctg caggaacatc 360

ggcttcgtct caaaatgatg tgggactgga tcccgacaac tgcaangtcc tcgtcaacat 420

ttgaacanca nagccct 437

<210> 1805
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1805

gtcgcgnnna cgcgtacgta agctcggaat tcggctcgag aacagagtcc tgatattgct 60

caaggtgtgc acggccacct tcacaaagag gcctgaggag attggtgctg gtgaccaagg 120

tcatatgttc ggctatgcca ctgacgagac tcccgagctc atgcccttga gccatgtcct 180

tgccacgaag ctcggtgcca agctcaccga ggttcggaag aacgggacat gcccttggct 240

gagacctgat ggcaagaccc aagtcactgt tgagtactac aatgacaagg gtgccatgg 299

<210> 1806
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 1806

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gtcacgacca aggccaacgt 60

tgactacgag aagatagtgc gtgacacctg caggaacatc ggcttcgtct caaatgatgt 120

gggactggat gccgacaact gcaaggtcct cgtcaacatt gagcagcaga gccctgatat 180

tgctcagggt gtacacggcc accttaccaa aaaacctgaa gaaattggtg ctggtgacca 240

gggtcacatg tttggctatg ccactgatga aacccctgaa ttgatgccat tgagcc 296

<210> 1807
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1807

ntcgcatgca cgcgtacgta agctcggaat tcggctcgag ctcgagccgc attcctgaga 60

agtaccttga tgagaagacc atcttccacc ttaacccttc angccgtttt gtcattggtg 120

gccctcatgg tgatgctggt ctcactggaa gaaagatcat cattgatacc tatggtggct 180

ggggtgctca tggtggaggt gccttttcag ggaaggaccc taccaaggtt gacagaagtg 240

gtgcctatat tgtaaggcag gctgcaaaga gtgtcgtggc aaatggcctt gctagaaggt 300

gcatgtgc 308

<210> 1808
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1808

caggctgcta agagcattgt ggcaagtgga cttgccagaa ggtgcattgt gcaagtgtct 60

tatgccattg gtgtgcctga gcctttgtct gtgtttgttg acacctatgg cactgggaag 120

atccatgata aggagattct caacattgtg aaggaaaact ttgatttcag gcctggtatg 180

atctccatca accttgatct caagaggggt ggaaataacn ggttttggan nactgccncc 240

natggacant tggaangnac c 261

<210> 1809
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 1809

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcgn gctgagccct tgtctgtgtt 60

tgttgacact tatggcactg ggaagatccc tgacaaggaa atcctcagca ttgtgaagga 120

gagttttgac ttcaggcctg gcatgatctc catcaacctt gatctcaaga ggggtggaaa 180

tggcaggttc ttgaagactg ctgcatatgg acactttggc agagatgacc ctgacttcac 240

atgggaagtg gtgaagccac tcaaggggga gaagg 275

<210> 1810
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1810

nantcgnang ctcngaattc ggctcgaggg tgatggtttt cggagnnntc anaaccaagg 60

ccaacgtgga ctatgagaag attgtgcgtg acacatgcag gaacattggt tttgtctctg 120

atgatgttgg tcttgatgct gacaactgca aggtcctcgt caacattgag caacagagtc 180

ctgatattgc tcaaggtgtg cacggccacc tcacaaagag gcctgaggag attggtgctg 240

gtgaccaagg tcatatgttc ggctatgcca 270

<210> 1811
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1811

tgcacgcgta cgtaagctcg gaattcggct cgaggacacc tatggaggat ggggtgcaca 60

tggtggtggt gccttctctg ggaaggatcc tatcaaggtt gataggagtg gtgcctacat 120

tgtgaggcaa gctgcaaaga gcattgttnc caaatggact tgctaggagg gcaattgtgc 180

aagtttccta tgccattggt gtgcctgagc ccttgtctgt gtttgttgac acttatggca 240

ctgggaagat ccctgacaag gaaatcctca gcattgtgaa ggagagtttt gactcaggcc 300

tggatgatct cnatcac 317

<210> 1812
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 1812

acgtcncang cangcgtacg taagctcggn attcggctcg aggcttgaga aatggcacaa 60

ganacctttc tattcacatc tgaatctgta aacgagggtc accccgacaa gctgtgcgaa 120

ccagatctct gatgcagtgc tcgatgcgtg ccttgaacag gaccctgaca gcaaggttgc 180

ctgtgagaca tgcaccaaga ccaacatggt catggtcttt ggagngatca canccaaggg 240

ccnnacgtag nctatgagaa gattgtccgt gacacctgcc gcgaaattgg attcatctct 300

gatgtgttcg gtcnngatgc gcc 323

<210> 1813
<211> 342
<212> nucleic acid
<213> Glycine max

<400> 1813

gctgcaaaga gtgttgtggc aaatggcctt gccagaaggt gcattgtcca agtttcctat 60

gccattggtg tccctgagcc cttgtcagtg tttgtggaca cttatggaac tgggaagatt 120

cctgacaagg agattcttca aattgtgaag gagaatttcg acttcagacc tggaatgatc 180

accattaact tggaccttaa gaggggtggc cataggttcc tcaagacagc tgcttatgga 240

cactttggaa gggatgacct gacttcacct gggaagttgt gaagccatca agtctgagaa 300

gccncaactt agatgtgtga gttaaccatc ccttcatggn gc 342

<210> 1814
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 1814

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gacggctgcg agaagcgaca 60

gaaggggaag aaagatcatc attgatacct atggtggctg gggtgctcat ggtggaggtg 120

ccttttcagg gaaggaccct accaaggttg acagaagtgg tgcctatatt gtaaggcagg 180

ctgcaaagag tgtcgtggca aatggccttg ctagaaggtg cattgtgtca gtttcctatg 240

ccattggtgt ccctgagccc ttgtcagtgt ttgtggacac ttatggaact gggaagattc 300

ctgacaagga gattctgc 318

<210> 1815
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1815

cgcntgcacg cgtacgtaag ctcggaattc ggctcgagca cctatggagg atggggtgca 60

catggtggtg gtgccttctc tgggaaggat cctaccaagg ttgataggag tggtgcctac 120

attgtgaggc aagctgcaaa gagcattgtt gcaaatggac ttgctaggag ggcaattgtg 180

caagtttcct atgccattgg tgtgcctgag cccttgtctg tgtttgttga cacttatggc 240

actgggaaga tccctgacaa ggaaatcctc agcattgtgn 280

<210> 1816
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 1816

gagcattgtg gcaagtggac ttgccagaag gtgcattgtg caagtgtctt atgccattgg 60

tgtgcctgag cctttgtctg tgtttgttga cacctatggc actgggaaga tccatgataa 120

ggagattctc aacattgtga aggaaaactt tgatttcagg cctggtatga tctccatcaa 180

ccttgatctc aagaggggtg gaaataacag gtttttgaag actgctgcct atggac 236

<210> 1817
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1817

acgtcgcang cacgcngacg taagctcgga attcggctcg aggtgccntc tctgggangg 60

atcctaccaa ggttgatatg antggtgcct anattgtgag gcaagctgca aagagcattg 120

ttgcaaatgg acttgctagg agggcaattg tncaagtttc ctatgccatt ggtgngcctg 180

agcccttntc tgtgtttgtt gacacggatg gcactgggaa gatccctgac aangnaatcc 240

tcagcattgt gaaggagagt tttgacttca ggcctggcnt gatctccatc naccttgagc 300

tcaagagggg tgnn 314

<210> 1818
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1818

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag caatgacgaa attgctgctg 60

acctcaaaga gcatgtgatc aagcctgtga tcccagagaa gtaccttgat gagangacca 120

ttttccactt gaacccttca ggccgttttg tcattggtgg ccctcatggc gatgctggtc 180

tcaccggccg caagatcatt atcgatactt atggaggatg gggtgctcat ggtggtggtg 240

ctttctccgg gaaggaccct accaagg 267

<210> 1819
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1819

gtcgcangca cgcntacgta agctcggaat tcggctcgag ctctgggaag gatcctacca 60

aggttgatag gagtggtgcc tacattgtga ggcaagctgc aaagagcatt gttgcaaatg 120

gacttgctag gagggcaatt gtgcaagttt cctatgccat tggtgtgcct gagcccttgt 180

ctgtgtttgt tgacacttat ggcactggga agatccctga caaggaaatc ctcagcattg 240

tgaaggagag ttttgacttc aggcctggca tgatctcc 278

<210> 1820
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 1820

catcgtatgc ncgcgtacgt aagctcggaa ttcggctcga gaattgtgca agtttcctat 60

gccattggtg tgcctgagcc cttgtctgtg tttgttgaca cttatggcac tgggaagatc 120

cctgcacaag gaaatcctca gcattgtgaa ggagagtttt gacttcaggc ctggcatgat 180

ctccatcaac cttgatctca agaggggtgg aaatggcagg ttcttgaaga ctgctgcata 240

tggacacttt ggcagagatg accctgactt cacatgggaa g 281

<210> 1821
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1821

cttgccagaa ggtgcattgt gcaagtgtct tatgccattg gtgtncctga gcctttgtac 60

tgtgtttgtt gacacctatg gcactggaaa gatccctgac aaggagntcc ttaacattgt 120

gaaggagaac tttgatttca ggcctggtat gatctccatc aaccttgatc tcaagagggg 180

nggaaataac aggtttttga agactgctgc atatggacac tttggaagag aggaccctgg 240

acttcacatg ggaag 255

<210> 1822
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1822

gtcgcatgca cgcgtacgta agctcggaat tcggctcgan ggagtggtgc ctacattgtg 60

angcaagctg caaagagcat tgttgcaaat ggacttgcta ggagggcaat tgtgcaagtt 120

tcctatgcca ttggtgtgcc tgagcccttg tctgtgtttg ttgacactta tggcactggg 180

aagatccctg acaaggaaat cctcagcatt gtgaaggaga gttttgactt caggctggca 240

tgatctccat caacttgatc tcaagagggg tgggaatggc aggttcttga gatgctgcaa 300

<210> 1823
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1823

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gtgcctacat tgtgaggcaa 60

gctgcaaaga gcattgttgc aaatggactt gctaggaggg caattgtgca agtttcctat 120

gccattggnc tgcctgagcc cttgtctgtg tttgttgaca cttatggcac tgggaagatc 180

cctgacaagg aaatcctcag cattgtgaag gagagttttg acttcaggcc tggcatgatc 240

tcatcaacct tgatctcaag aggggtggaa atggcaggtt ctt 283

<210> 1824
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1824

accgtgnann cacncgtacg taagctcgga attcggctcg agnggcaggt ttgtcattgg 60

agggccgcat ggcgatgntg gtctcaccgg ccgcaagatc atcatcgaca cctatggagg 120

atggggtgca catggtggtg gtgccttctc tgggaaggat cctaccaagg ntgataggag 180

tggtgcctac attgtgaggc aagctgcaaa gagcattgtt gcaaatggac ttgctaggag 240

ggcaattgtg caagtttcct atggccattg gtgtgcctga gcccttgtct gtgtttgtng 300

acactt 306

<210> 1825
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1825

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggaggttggt gctggtgacc 60

agggtcacat gtttggctat gccactgatg aaacccctga gtacatgccc ctcagccatg 120

tccttgcaac caaactcggt gctcgcctca ccgaggttag gaaaaatggt acctgtgctt 180

ggctgaggcc agatggcaag acacaagtaa ctgttgagta ctacaatgac aatggtgcca 240

tggttccagt tcgtgtccac antgtcntaa tttccaccca ncatgatcct nctgtgagca 300

tgaccaaatt ggt 313

<210> 1826
<211> 357
<212> nucleic acid
<213> Glycine max

<400> 1826

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 60

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 120

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 180

cccagacagc aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga 240

gaaatcacga ccaaggccaa cgttgactac gagaagatag tgcgtgacac ctgcaggaac 300

atcggcttcg tctcaaatga tgtgggatgg atgccgacaa ctgcaaggtc ctcgtca 357

<210> 1827
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1827

tgncgcatgc actcgtacgt aagctcggaa ttcggctcga ggcaaggtcc tcgtcaacat 60

tgagcaacag agtcctgata ttgctcaagg tgtgcacggc caccttcaca aagaggcctg 120

aggagattgg tgctggtgac caaggtcata tgttcggcta tgccactgac gagactcccg 180

agctcatgcc cttgagccat gtccttgcca cgaagctcgg tgccaagctc accgaggttc 240

ggaagaacgg gacatgccct tggctgagac ctgatggcaa gacccaagtc atgttgagta 300

tacaatgaca agggtgccat 320

<210> 1828
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 1828

nngtcgcatg cacgcgtacg taagctcgga attcggctcg agggtcctcg tcaacattga 60

gcaacagagt cctgatattg ctcaaggtgt gcacggccac ctcacaaaga ggcctgagga 120

gattggtgct ggtgaccaag gtcatatgtt cggctatgcc actgacgaga ctcccgagct 180

catgcccttg agccatgtcc ttgccacgaa gctcggtgcc aagctcaccg aggttcggaa 240

gaacgggaca tgcccttggc tgagacctga tggcaagacc ca 282

<210> 1829
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1829

cgtgacacat gccgcgaaat tggattcatc tctgatgatg ttggtcttga tgctgacaaa 60

tgcaaggtgt tggtcaacat tgagcagcag agccctgata tcgcccaggg tgtgcacggt 120

cacttcacca agcgcccaga ggaggttggt gctggtgacc agggtcacat gtttggctat 180

gccactgatg aaacccctga gtacatgccc ctcagccatg tcttgcaacc aaactcggtg 240

ctcgctcacc gaggttagga aaaatggtac tgtgcttggc tga 283

<210> 1830
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1830

ncncangcac gcgtacgtaa gctcggaatt cggctcgagn cgtgacacct gcaggaacat 60

cggcttcgtc tcaaatgatg tgggactgga tgccgacaac tgcaaggtcc tcgtcaacat 120

tgagcagcag agccctgata ttgctcaggg tgtacacggc caccttacca aaaaacctga 180

agaaattggt gctggtgacc agggtcacat gtttggctat gccactgatg aaacccctga 240

attgatgcca ttgagccatg ttcttgcaac aaaactcggt gctcgtctca 290

<210> 1831
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1831

gtcgcangca cgcgtacgta agctcggaat tcggctcgag catgcttgnc agcaggaccc 60

tgacagcaag gttgcctgtg aaacctgcac caagaccaac atggtgatgg ttttcggaga 120

gatcacaacc aaggccaacg tggactatga gaagattgtg cgtgacacat gcaggaacat 180

tggttttgtc tctgatgatg ttggtcttga tgctgacaac tgcaaggtcc tcgtcaacat 240

tgagcaacag agtcctgata ttgctcaa 268

<210> 1832
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1832

cgcangcacg cgtacgtaag ctcggaattc ngctcgangg agattggtgc tggtgaccaa 60

ggtcatgggt tcggctatgc cactgacgag actcccgagc tcatgccctt gagccatgtc 120

cttgccacga agctcggtgc caagctcacc gaggttcgga agaacgggac atgcccttgg 180

ctgagacctg atggcaagac ccaagtcact gttgagtact acaatgacaa gggtgccatg 240

gttccaatcc gcgtccacac tgtgctcatc tncacacaac atacgaccng agtgtggncg 300

cggattggna catgg 315

<210> 1833
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1833

agaaattggt gctggtgacc agggtcacat gtttggctat gccactgatg aaacccctga 60

attgatgcca ttgagccatg ttcttgcaac aaaactcggt gctcgtctca ccgaggttcg 120

caagaacggt acctgccctt ggctgaggcc tgatgggaag acccaagtga ccgttgagta 180

ttacaatgac aatggtgcca gggttcctat tcgtgtacac accgtgctaa tctccaccca 240

<210> 1834
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 1834

antcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggctcgatgc atgcttggag 60

caggaccctg acagcaaggt tgcctgtgaa acctgncacc aagaccaaca tggtgatggt 120

tttcggagag atcacaacca aggccaacgt ggactatgag aagattgtgc gtgacacatg 180

caggaacatt ggtccaagtc tctgatgatg ttggtcttga tgctgacaac tgcaaggtcc 240

tcgtcaacat tgagcaacag agtcctgata ttgctcaagg tgtgcacggc cacctc 296

<210> 1835
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1835

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcaagatcat tatcgatact 60

tatggaggat ggggtgctca tggtggtggt gctttctccg ggaaggaccc taccaaggtt 120

gataggagtg gtgcttacat tgtgagacag gctgctaaga gcatgtggca agtggacttg 180

ccagaaggtg cattgtgcaa gtgtcttatg ccattggtgt gcctgagcct ttgtctgtgt 240

ttgttgacac ctatggcact gggaagatcc atgataagga gattct 286

<210> 1836
<211> 341
<212> nucleic acid
<213> Glycine max

<400> 1836

nacangcacg cntacgtaag ctcggaattc ggctcgagct caagtttttg aagtatagag 60

atggcagaga cattcctatt tacctcagag tcagtgaacg agggacaccc tgnccaagct 120

ctgtgaccaa atctctgatg ctgtcctcga cgcttgcctc gaacaggacc cagacagcaa 180

ggttgcctgc gaaacatgca ccaaaaccaa cttggtcatg gtcttcggag aaatcacgac 240

caaggccaat gttgactacg agaagatagt gcgtgacacc tgcaggaaca tcggctttgt 300

ctcaaacgat gtgggactgg atgccgacaa tgcaaggtcc t 341

<210> 1837
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1837

gtcnnangca cgntacgtaa gctcggaatt cggctcganc tcgagccgaa tcggctcgag 60

gccgcatggc gatgctggtc tcncncggcc gcaagatcan catcgacacc tatggaggan 120

ggggtgcaca tggtggtggt gccttctctg ggaaggatcc taccaaggtt gataggagtg 180

gtgcctacat tgtgaggcaa gctgcaaaga gcattgttgc aaatggactt gctaggaggg 240

caattgtgca agtttcctat gccattggtg tgcctgagcc cttgtctgtg tttgttgaca 300

cttatggcac tgg 313

<210> 1838
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 1838

nangcacgcg tacgtaagct cggaattcgg ctcgaggaca cctgcaggaa catcggcttc 60

gtctcaaatg atgtgggact ggatgccgac aactgcaagg tcctcgtcaa cattgagcag 120

cagagccctg atattgctca gggtgtacac ggccacctta ccaaaaaacc tgaagaaatt 180

ggtgctggtg accagggtca catgtttggc tatgccactg atgaaacccc tgaattgatg 240

ccattgagcc atgttcttgc aacaaaactc ggtgct 276

<210> 1839
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1839

angtcgcang cacgcgtacg taagctcgga attcggctcg agntgcacca aaaccaactt 60

ggtcatggtc ttcggagaaa tcacgaccaa ggccaacgtt gactacgaga agatagtgcg 120

tgacacctgc aggaacatcg gcttcgtctc aaatgatgtg ggactggatg ccgacaactg 180

caaggtcctc gtcaacattg agcagcagag ccctgatatt gctcagggtg tacacggcca 240

ccttaccaaa aaacctgaag aaattggtgc tggtgaccag ggtcac 286

<210> 1840
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1840

gtcgctagca cgcgtacgta agctcggaat tcggctcgag ntttcctatg ccattggtgt 60

ccctgagccc ttgncagtgt ttgtggacac ttatggaact gggaagattc ctgacaagga 120

gattcttcaa attgtgaagg agaatttcga cttcagacct ggaatgatca ccattaactt 180

ggaccttaag aggggtggcc ataggttcct caagacagct gcttatggac actttggaag 240

ggatgaccct gacttcacct gggaagttgt gaagccactc aagtctgaga agcctcaagc 300

ntaagattgt tgtga 315

<210> 1841
<211> 408
<212> nucleic acid
<213> Glycine max

<400> 1841

gagaagacga cagaaggggg cagcgcttga tttgaggcca ggcaagcccc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacaccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

gacagcaaag ttgcctgcga aacatgcacc aaaaccaact tggtcatggt cttcggagaa 300

atcacgacca aggccaacgt tgactacgag aagatagtgc gttacacctg caagaacatc 360

cgntttctct cnaatgattt ggaactggat nccaaaaatt gcaaggtc 408

<210> 1842
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1842

ttgatacct a tggtggctgg ggtgctcatg gtggaggtgc cttttcaggg aaggacccta 60

ccaaggttga cagaagtggt gcctatattg taaggcaggc tgcaaagagt gtcgtggcaa 120

atggccttgc tagaaggtgc attgtgcaag tttcctatgc cattggtgtc cctgagccct 180

tgtcagtgtt tgtggacact tatggaactg ggaagattcc tgacaaggag attctgcaat 240

tgtgaaggag attcc 255

<210> 1843
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1843

tctcaagttt ttgaagtata gagatggcag agacattcct atttacctca gagtcagtga 60

acgagggaca ccctgacaag ctctgtgacc aaatctctga tgctgtcctc gacgcttgcc 120

tcgaacagga cccagacagc aaggttgcct gcgaaacatg caccaaaacc aacttggtca 180

tggtcttcgg agaaatcacg accaaggcca atgttgacta cgagaagata gtgcgtgaca 240

cctgcaggaa catcggcttt gtctcaaacg atg 273

<210> 1844
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1844

nacgcangcn cgcgtacgta agctcggaat tcggctcgag agtggacttg ccagaaggtg 60

cattgtgcaa gtgtcttatg ccattggtgt gcctgagcct ttgtctgtgt ttgttgacac 120

ctatggcact gggaagatcc atgataagga gattctcaac attgtgaagg aaaactttga 180

tttcaggcct ggtatgatct ccatcaacct tgatctcaag aggggtggaa ataacaggtt 240

tttgaagact gctgcctatg gacactttgg aa 272

<210> 1845
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 1845

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cacgaagctc ggtgccaagc 60

tcaccgaggt tcggaagaac gggacatgcc cttggctgag acctgatggc aagacccaag 120

tcactgttga gtactacaat gacaagggtg ccatggtncc caatccgcgt ccacactgtg 180

ctcatctcca cacagcatga tgagactgtc acaaatgatg agattgcagc tgatcttaaa 240

gaacacgtga ttaagcctgt gattcctgag aagtacctt 279

<210> 1846
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1846

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gaccaacatg gtgatggttt 60

tcggagagat cacaaccaag gccaacgtgg actatgagaa gattgtgcgt gacacatgca 120

ggaacattgg ttttgtctct gatgatgttg gtcttgntgc tgacaactgc aaggtccctc 180

gtcaacattg agcaacagag tcctgatatt gctcaaggtg tgcacggcca cctcacaaag 240

acgcctgagg agattggtgc tggtgacca 269

<210> 1847
<211> 439
<212> nucleic acid
<213> Glycine max

<400> 1847

ccacgcgtcc gtacngctgc gagaagacga cagaaggggg cagcgcttga tttgaggcca 60

ggcaagcccc actcaaccac cacacctctc ctcgttcacg ctacccottt ctgctcttct 120

tctacctttc aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt 180

cggtgaacga gggacaccct gacgagctct gcgaccaaat ctccgatgct gtcctcgacg 240

cttgcctcga gcaggaccca gacagcaaag ttgcctgcga aacatgcacc aaaaccaact 300

tggtcatggt cttcggagaa atcacgacca angncaacgt tgactacgan aaaganantg 360

ggttanactn gcaggannte ggcttcgtct caaatgatgt gggactggat gccgacaact 420

gcaaggtcct cgtcaacat 439

<210> 1848

<211> 407
<212> nucleic acid
<213> Glycine max

<400> 1848

tcgaggccag gcaagcccca ctcaaccacc acacctctcc tcgttcacgc tacccctttc 60

tgctcttctt ctacctttca agttttaaaa gtataaagat ggcagagaca ttcctattta 120

cctcagagtc ggtgaacgag ggacaccctg acaagctctg cgaccaaatc tccgatgctg 180

tcctcgacgc ttgcctcgag caggacccag acagcaaagt tgcctgcgaa acatgcacca 240

aaaccaactt ggtcatggtc ttcggagaaa tcacgaccaa ggccaacgtt gactacgaga 300

agatagtgcg tgacacctgc aagaacatcg ggttcgtccc aaatgatgtt tggaactggg 360

gttccgacaa ctgggaaagg tcctcgttca anattgagca agcaaag 407

<210> 1849
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 1849

gtcgcaggca cgcgtacgtn agctcggaat tcggctcgag nttcctattt acctcagagt 60

cagtgaacga gggacaccct gacaagctct gtgaccaaat ctctgatgct gtcctcgacg 120

cttgcctcga acaggaccca gacagcaagg ttgcctgcga aacatgcacc aaaaccaact 180

tggtcatggt cttcggagaa atcacgacca aggccaatgt tgactacgag aagatagtgc 240

gtgacacctg caggaacatc ggctttgtct caaacgatgt gg 282

<210> 1850
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1850

agtngcangc acgcgtacgt aagctcggaa ttcggctcga gagcaattta tcaagcctgt 60

cattcctgag aagtacctgg atgagaagac catcttccac cttaaccctt ctggccgttt 120

tgtcattggt ggccctcatg gtgatgctgg tctcactgga agaaagatca tcattgatac 180

ctatggtggg tggggtgctc atggtggagg tgccttttca gggaaggacc ctaccaaggt 240

tgacagaagt ggtgcctata tcgtga 266

<210> 1851
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1851

ggtgctcatg gtggtggtgc cttctccggg aaggatccca ccaaggttga taggagtggt 60

gcttacattg tgagacaggc tgctaagagc attgtggcaa gtggactagc cagaaggtgc 120

attgtgcaag tgtcttatgc cattggtgtg cccgagcctt tgtctgtctt tgttgacacc 180

tatggcaccg ggaagatcca tgataaggag attctcaaca ttgtgaagga gaatttgatt 240

ncaggcccgg tatgatctcc atcaaccttg at 272

<210> 1852
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 1852

cnncatncgt aagtnantnc nncattnggc tcgagccaac ttggtcatgg tctncggata 60

natcntgncc aaggccancg ttgnctacga gnagatagtg cgtgacacct gcaggaacat 120

cggcttcgtc tcanatgatg tgggactgga tgccgacaac tgcaaggtcc tcgtcaacat 180

tgagcagcag agccctgata ttgctcaggg tgtacacggc caccttacca aaaaacctga 240

agaaattggt gctggtgacc agggtcacat gtttggctat gccatgatga nccctgaatt 300

gatgc 305

<210> 1853
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 1853

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gcacaaagcg ggttactgtc 60

tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg 120

cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct 180

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 240

ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag atcacaacca 300

aggccaacgt ggactatgag aagattgtgc gtgacacatg 340

<210> 1854
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 1854

agtcgcangc acgcntacgt aagctcggaa ttcggctcga gctctctgtt ctcttctacc 60

tctcaagtnt ttgaagtata gagatggcag agacattcct atttacctca gagtcngtga 120

acgagggaca ccctgacaag ctctgtgacc aaatctctga tgctgtcctc gacgcttgcc 180

tcgaacagga cccagacagc aaggttgcct gcgaaacatg caccaaaacc aacttggtca 240

tggtcttcgg agaaatcacg accaaggcca atgttgacta cgagaagata gtgcgtgaca 300

cctgcaggaa catcggcttt gtctcaaac 329

<210> 1855
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 1855

tcgcatgcac gcntacgtaa gctcggaatt cggctcgagn ganattggtg ctggtgacca 60

gggtcacatg tttggctatg ccactgatga aacccctgaa ttgatgccat tgagccatgt 120

tcttgcaaca aaactcggtg ctcgtctcac cgaggttcgc aagaacggta cctgcccttg 180

gctgaggcct gatgggaaga cccaagtgac cgttgagtat tacaatgaca atggtgccag 240

ggttcctatt cgtgtacaca ccgtgcnnaa tctccaccca acacgacgag nct 293

<210> 1856
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1856

naaangtcgc atgcacgcgt acgtaagctc ggaattcggc tcgagtgacc gttgagtatt 60

acaatgacaa tggtgccagg gttcctattc gtgtacacac cgtgctaatc tccacccaac 120

acgacgagtn ctgtcaccaa tgacgaaatt gctgctgacc tcaaagagca tgtgatcaag 180

cctgtgatcc cagagaagta ccttgatgag aagaccattt tccaacttga acccttcagg 240

ccgttttgtc attggtggcc ctcatggcga tgctggtctc accggccgca agatcattat 300

cgatac 306

<210> 1857
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1857

gcangcaggg gtacgtnagc tcggaattcg gctcgagggn aggttggtgc tggtgaccag 60

ggtcacatgt ttggctatgc cactgatgaa acccctgagt acatgcccct cagccatgtc 120

cttgcaacca aactcggtgc tcgcctcacc gaggttagga aaaatggtac tgtgcttggc 180

tgaggccaga tggcaagaca caagtaactg ttgagtacta caatgacaat ggtgccatgg 240

ttccagttcg tgtccacact gtcctaattt ccacacaaca tgncnnnacc ganc 294

<210> 1858
<211> 394
<212> nucleic acid
<213> Glycine max

<400> 1858

gagaagacga cagaaggggg cagcgcttga tttgaggcca ggcaagcccc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacacccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

agacagcaaa gttgcctgcg aaacatgcac caaaaccaac ttggtcatgg tcttcggaga 300

aatcacgacc aaggccaacg ttgactacga gaagatagtg cgtgacacct gcangaacat 360

cggcttcgtc tcaaatgatg tgggactgga tgcc 394

<210> 1859
<211> 307
<212> nucleic acid

<213> Glycine max

<400> 1859

cgcatgcacg cgtacgtaag ctcggaattc gggctcgagc tctgatgatg ttggtcttga 60

tgctgacaaa tgcaaggtgt tggtcaacnt tgagcagcag agccctgata tcgcccaggg 120

tgtgcacggt cactttcacc aagcgcccag aggaggttgg tgctggtgnc cagggtcaca 180

tgtttggcta tgccactgat gaaacccctg agtacatgcc cctcagccat gtccttgcaa 240

ccaaactcgg tgctcgcctc accgagttag gaaaaatggt acctgtgctt ggctgaggcc 300

agatngc 307

<210> 1860
<211> 493
<212> nucleic acid
<213> Glycine max

<400> 1860

gnaactctta ccggccangt accgttaang agccccggnt cgacannacg cgttagtccg 60

gctgcgaaga aaacgacaga agggggcagc gcttgatttg aggccaggca agccccactc 120

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 180

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 240

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 300

gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtcttc 360

ggagaaatca cgaccaangg caacgttgac tacnanaann aaattncntg acacctgcag 420

gaacatcggc ttcgtctcaa atgatgtggg actgggatgc cgacaactgc aangtcctcg 480

tcaacattga gca 493

<210> 1861
<211> 489
<212> nucleic acid
<213> Glycine max

<400> 1861

ggctttnnng cccngtnnaa tcttacaggn caggtaccgg tacggaattc ccggctcgac 60

ccacgcgtac gtacggctgc gagaagacga cagaaggggg cagcgcttga tttgaggcca 120

ggcaagcccc actcaaccac cacacctctc ctcgttcacg ctacccettt ctgctcttct 180

tctacctttc aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt 240

cggtgaacga gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg 300

cttgcctcga gcaggaccca gacagcaaag ttgcctgcga aacatgcacc aaaaccaact 360

tggtcatggt cttcggagaa atcacgacca angccaacgt tgactacgaa aaagataatt 420

ccttaacacc tgcaggaaca tcggcttcgt ctcaaatgat gtgggactgg atgccgacaa 480

ctgcaaggt 489

<210> 1862
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1862

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag cagaacatcg nttcgtctca 60

aatgatgtgg gactggatgc cgacaactgc aaggtacctc gtacaacatt gagcagcaga 120

gccctgatat tgctcagggt gtacacggcc accttaccaa aaaacctgaa gaaattggtg 180

ctggtgacca gggtcacatg tttggctatg ccactgatga aacccctgaa ttgatgccat 240

tgagccatgt tcttgcaaca aaactcggtg ctcgtctcac cgaggttcgc aagaacggta 300

<210> 1863
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 1863

ncatgcacgc gtacgtaagc tcggaattcg gctcgagctt ctacctctca agtttttgaa 60

gtatagagat ggcagagaca ttcctattta ccttcagagt cagtgaacga gggacaccct 120

gacaagctct gtgaccaaat ctctgatgct gtcctcgacg cttgcctcga acaggaccca 180

gacagcaagg ttgcctgcga aacntgcacc aaaaccaact tggtcatggt cttcggagaa 240

atcacgacca aggccaatgt tgactacgag aagatagtgc gtgacacctg caggaacatc 300

ggctttgtct caaacgatgt gggactggat 330

<210> 1864

<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1864

cgcatgcacg cgtacgtaag ctcggaattc ggctcganct cgagccgaat tcngctcgag 60

ttcggctcga gcatggtgga gntgcctttt cagggaaagn ccctaccaag gttgacagaa 120

gtggtgccta tatcgtgagg caggctgcaa agagtgttgt ggcaaatggc cttgccagaa 180

ggtgcattgt ccaagtttcc tatgccattg gtgtccctga gcccttgtca gtgtttgtgg 240

acacttatgg aactgggaag attcctgaca aggagattct tcaaattgtg aaggagaatt 300

cgacttca 308

<210> 1865
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 1865

gtngcangcg tacgtaagct cggaattcgg ctcgaggcct tgccagaagg tgcattgtcc 60

aagtttccta tgccattggt gtccctgagc ccttgtcagt gtttgtggac acttatggaa 120

ctgggaagat tcctgacaag gagattcttc aaattgtgaa ggagaatttc gacttcagac 180

ctggaatgat caccattaac ttggacctta agaggggtgg ccataggttc ctcaagacag 240

ctgcttatgg acactttgga agggatgacc ctgacttcac ctgggaag 288

<210> 1866
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 1866

gcgtacgtna gctcggaatt cggctcgagn gcaagtttcc tatgccattg gtgtccctga 60

gcccttgtca gtgtttgtgg acacttatgg aactgggaag attcctgaca aggagattct 120

gcaaattgtg aaggagaatt tcgacttcag acctggaatg atcaccatta acttggacct 180

taagaggggt ggtcataggt tcctcaagac agctgcttat ggacactttg gaagggatga 240

tgcagacttc acctgggaag ttgtgaagcc actcaagtca g 281

<210> 1867
<211> 353
<212> nucleic acid
<213> Glycine max

<400> 1867

acttaacaac agcacaaagc gggttactgt ctgttcaagc taccatctct gctctctctn 60

tcttagtgcc tcnttnccag aagttaaaaa tggcccaaga aactttccta ttcacancct 120

gaatcagtga acgaggggca ccctgacaag ctctgtgacc agatctccga tgctgtgctc 180

gatgcatgct tgagcaggac cctgacagca aggttgcctg tgaaacctgc accaagacna 240

acatggtgat ggttttcgga gagatcacaa ccaangccaa cgtggactat gaggagattg 300

tgngtgacac atgcaagaac attggtttgt ctccgatgat gtnngtcttn ntg 353

<210> 1868
<211> 502
<212> nucleic acid
<213> Glycine max

<400> 1868

aattttcacg ccgnccaggt ancggtcana gaattcccgg ggncgaccca cgcgtccncg 60

gacgcgtggg cggacgcgtg ggcggacgcg tgggcggctg cgagaagacg acagaagggg 120

gcagcgcttg agaccaagcc ccactcaacc accacaccac tctctctgct cttcttctac 180

ctttcaagtt tttaaagtat taagatggca gagacattcc tatttacctc agagtcagtg 240

aacgagggac accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc 300

cttgaacagg acccagacag caaggttgcc tgcgaaacat gcaccaaaga ccaacttggt 360

catggtcttc ggagagatta acancaaagg ccaacgttga ctacgaagaa gatcgtgcgt 420

gacacctgca ggaacatcgg ctccgtctca aacgatgtgg gacttgatgc tgacaactgc 480

aangtccttg taacaatgaa ca 502

<210> 1869
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 1869

naangnagan gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtttttgaag 60

tatagagatg gcagagacat tcctatttcc ctcagagtca gtgaacgagg gacaccctga 120

caagctctgt gaccaaatct ctgatgctgt cctcgacgct tgcctcgaac aggacccaga 180

cagcaaggtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtct tcggagaaat 240

cacgaccaag gccatgttga ctacgagaag atagtgcgtg acacctgccg gaacatcggc 300

tttgtctcna acgatgtggg at 322

<210> 1870
<211> 418
<212> nucleic acid
<213> Glycine max

<400> 1870

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 60

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 120

aagctctgtg accagatctn cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 180

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cggagagatc 240

acaaccaagg ccaacgtgga ctatgagaaa gattgtgcgt gacacatgca ggaaccattg 300

ggttttgctc tgatgaatgt ggtcttggat gcttgacact gcaaggtcct cgtcaacatt 360

tgagcaacag aagtcctgat antgnttcaa ggtgtgcacg ggcaccttac aaaagang 418

<210> 1871
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1871

tacctctcaa gtttttgaag tatagagatg gcagagacat tcctatttac ctcagagtca 60

gtgaacgagg gacaccctga caagctctgt gaccaaatct ctgatgctgt cctcgacgct 120

tgcctcgaac aggacccaga cagcaaggtt gcctgcgaaa catgcaccaa aaccaacttg 180

gtcatggtct tcggagaaat cacgaccaag gccaatgttg actacgagaa gatagtgcgt 240

gacacctgca ggnacatcgg g 261

<210> 1872

<211> 277
<212> nucleic acid
<213> Glycine max

<400> 1872

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agcgaggggc accctgnaca 60

agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag gaccctgaca 120

gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc ggagagatca 180

caaccaaggc caacgtggac tatgagaaga ttgtgcgtga cacatgcagg aacattggtt 240

ttgtctctga tgatgttggt cttgatgctg acnactg 277

<210> 1873
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 1873

ctgnacgnnt gctcggaatt cggctcgaga ccaaggccaa cgttgactac gagaagatag 60

tgcgtgacac ctgcaggaac atcggcttcg tctcaaatga tgtgggactg gatgccgaca 120

actgcaaggt cctcgtcaac attgagcann cagagccctg atattgctca gggtgtacac 180

ggccacctta ccaaaaaacc tgaagaaatt ggtgctggtg accagggtca catgtttggc 240

tatgccactg atgaaacccc tgattgatgc cattgagcca tgttcttgca a 291

<210> 1874
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1874

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgctgtgaaa cctgcaccaa gaccaacatg 180

gtgatggttt tcggagagat cacaaccaag gccaacgtgg atatgagaag atgtgcgtga 240

cacatgcagg aacattggtt ttgctctgat gagttggctt gatgctg 287

<210> 1875

<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1875

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc caaggttgat aggagtggtg 60

cctacattgt gaggcaagct gcaaagagca ttgttgcaaa tggacttgct aggagggcaa 120

ttgtgcaagt ttcctatgcc attggtgtgc ctgagccctg tctgtgtttg ttgacactta 180

tggcactggg aagatccctg acaaggaaat cctcagcatt gtgaaggaga gttttgactt 240

caggcctggc atgatctcca tc 262

<210> 1876
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1876

tcncangcac gcgtacgtaa gctcggaatt cggctcgagg gggnanctga caagctctgt 60

gancagatct ccgatgctgt gctcgatggc atgcttggag caggacccnt acagcaangt 120

tgcctgtgan acctgnanca agaccaacat ggtgatggtt tncngagaga tcanaaccaa 180

ggccaacgtg gactatgaga agattgtgcg tgacacatgc aggaacattg gttttgtctc 240

tgatgatgtt ggtctgatgc tgacaatgca nagtcctcgt caacattgag cnacagagtc 300

ctgatattgc tcaag 315

<210> 1877
<211> 489
<212> nucleic acid
<213> Glycine max

<400> 1877

ggnngnntnn nggnaaactt tcacttgccg cgnccaggta anggtcagga attcccgggt 60

cgacccacgc gtccgtacgg ctgcgagaag acgacagaag ggggcagcgc ttnagatnan 120

nccccactca accaccacac cactctctct gctcttcttc tacctttcaa gtttttaaag 180

tattaagatg gcagagacat tcctatttac ctcagagtca gtgaacgagg gacaccctga 240

caagctctgc gaccanatct ccgatgctgt cctcgacgct tgccttgaac angacccaga 300

cagcaaggtt gcctgcgaaa catgcaccaa naccaacttg gtcatggtct tcggagaaga 360

tnancaccaa ggccaacgtt gactacgaag aagatcgtgc gttgacacct gcangaacat 420

cggcttccgt ctcaaacgat gtgggacttg atgctgacaa ctgcaanggt cttgtnaaca 480

ttgancacc 489

<210> 1878
<211> 468
<212> nucleic acid
<213> Glycine max

<400> 1878

actttacgnt gccangtccc ggtcangaat ncccgggtcg acccacgcgt cngacggctg 60

cgagaagacg acagaagggg gcagcgcttg agaccaagcc ccactcaacc accacaccac 120

tctctctgct cttcttctac ctttcaagtt tttaaagtat taagatggca gagacattcc 180

tatttacctc agagtcagtg aacgagggac accctgacaa gctctgcgac caaatctccg 240

atgctgtcct cgacgcttgc cttgaacagg acccagacag caaggttgcc tgcgaaacat 300

gcaccaagac caacttggtc atggtcttcg gagaagatna ccaccaaggc caacgttgac 360

tacgaagaag atngtgcgtg acacctgcan gaacatcngc ttcgtctcaa aagaatttgg 420

acttgatcct gaacaactgc aaaggtccct tgtaaacaat naancacc 468

<210> 1879
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1879

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcccccgag tacatgcccc 60

tcagccatgt ccttgcaacc aaacttggtg ctcgcctcac agaggttagg aagaatggca 120

cctgtgcttg gttgaggcca gatggtaaga cacaagtaac cgtcgagtac tacaatgaca 180

atggtgccat ggttccagtt cgtgtccaca ctgtcctaat ttccacccaa catgatgnga 240

cgtgagcaat gatcaaattg ctgcggacct taaagagcat gttatcaagc ctgtcattcc 300

<210> 1880
<211> 477
<212> nucleic acid

<213> Glycine max

<400> 1880

ttcnaactcn taccgcccag gaaccggtac aagaattccc ggctcgaccc acgcgtcang 60

tacggctgcg agaagacgac agaagggggc agcgcttgat ttgaggccag gcaagcccca 120

ctcaaccacc acacctctcc tcgttcacgc tacccctttc tgctcttctt ctacctttca 180

agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag 240

ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag 300

caggacccag acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc 360

ttcggagaaa tcacgaccaa ggccaacgtt gactacgaga agatagtgcg tgacacctgc 420

aagaacaacc ggtttctccc naattgaatn tgggactgga tgccgacaac tgcaang 477

<210> 1881
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1881

tgcccttggc tgagacctga tggcaagacc caagtcactg ttgagtacta caatgacaag 60

ggtgccatgg ttccaatccg cgtccacact gtgctcatct ccacacagca tgatgagnct 120

gtcacaaatg ntgagattgc agctgatctt aaagaacacg tgattaagcc tgtgattcct 180

gagaagtacc ttgatgagag accatttcca tttgaaccct tccnggcagg ttgtcattgg 240

agggcggcat ggggatgng 259

<210> 1882
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 1882

ccngggtcac ntgtttggct ntgccncgga cgagaccccn gnnttgatgc cattgngtca 60

tgttcttgcn actnanctcg gtgctcgtct caccgaggtt cgcnagaacg gaacctgccc 120

ntggttgagg cctgatggga agacccaagt gactgttgag tattacnntg acaacggtgc 180

catngttcca gttcgtgtcc ncactgtgct tatctccacc caacntgatg ngntgngacc 240

aacgacgaaa ttgc 254

<210> 1883
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 1883

nanactnaat gcacgcgtac gtaagctcgg aattcggctc gagagacagc aaagttgcct 60

gcgaaacatg caccaaaacc aacttggtca tggtcttcgg agaaatcacg accaaggcca 120

acgttgacta cgagaagata gtgcgtgaca cctgcaggaa catcggcttc gtctcaaatg 180

atgtgggact ggatgccgac aactgcaagg tcctcgtcaa cattgagcag cagagccctg 240

atattgctca gggtgtacac ggccacctta ccaaaaaac 279

<210> 1884
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1884

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tcgagccgta tctctctgtt 60

ctcttctacc tctcaagttt ttgaagtata gagatggcag agacattcct atttacctca 120

gagtcagtga acgagggaca ccctgacaag ctctgtgacc aaatctctga tgctgtcctc 180

gacgcttgcc tcgaacagga cccagacagc aaggttgcct gcgaaacatg caccaaaacc 240

aacttggtca tggtcttcgg agaaatcacg accaaggcca atgttgacta cgagaagata 300

gtgcgtgaca cct 313

<210> 1885
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1885

acgtcgcatg cacgcgtacg tnagctcgga attcggctcg agcttctacc tctcaagttt 60

ttgaagtata gagatggcag agacattcct atttacctca gagtcagtga acgagggaca 120

ccctgacaag ctctgtgacc aaatctctga tgctgtcctc gacgcttgcc tcgaacagga 180

cccagacagc aaggttgcct gcgaaacatg caccaaaacc aacttggtca tggtcttcgg 240

agaaatcacg accaaggcca atgttgacta cgagaagata gtgcgtgaca cctgcagga 299

<210> 1886
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 1886

nntaannntn agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gaaagtataa 60

agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc 120

tctgcgacca natctccgat gctgtcctcg acgcttgcct cgagcaggac ccagacagca 180

aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga gaaatcacga 240

ccaaggccaa cgttgactac gagaagatag tgcgtgacac ctgcaggaac atcggcttcg 300

t 301

<210> 1887
<211> 508
<212> nucleic acid
<213> Glycine max

<400> 1887

tnnnnnaact nagttctccg cngcctgnna angtcaagan gncccgggcc gacccacgcg 60

tccntacggc tgcgagaaga cgacagaagg gggcagcgct tgatttgagg ccaggcaagc 120

cccactcaac caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct 180

ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa 240

cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct 300

cgagcaggac ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggtcat 360

ggtcttcgga gaaatcacga ccaaggccaa cgttgactac gagaagatag tgcgtgacac 420

ctgcangaac atcggcttcg tctcaaaatg atgtnggact ggattcccac aactgcaaag 480

ncctcccnta aaattttgcc anaanccc 508

<210> 1888
<211> 278
<212> nucleic acid

<213> Glycine max

<400> 1888

gncgcacgcg tacgtaagct cggaattcgg ctcgagggca ggtttgtcat tggagggccg 60

catggcgatg ctggtctcac cggccgcaag atcatcatcg acacctatgg aggatggggt 120

gcacatggtg gtggtgncct tctctgggaa ggatcctacc aaggttgnta ggagtggtgc 180

ctacattntg aggcaagctg caaagagcat tgttgcaaat ggacttgcta ggagggcaat 240

tgtgcaagtt tcctatgcca ttggtgtgcc tgagccct 278

<210> 1889
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1889

cnttggctga gacctgatgg caagacccaa gtcantgttg agtactacaa tgacaagggt 60

gccatggttc caatncgcgt ccacantgtg cttcatntnc acacagcatg atgagtgngt 120

nanaaatgat gagattgcag ctgatcttaa agaacacgtg attaagcntg tgattnctga 180

gaagtacctt gatgagaaga ccattttcca tttgaaccct tntgggcagg tttgtcatgg 240

agggccgcat ggcgattttg gtgtnanggc ngnaagatcc 280

<210> 1890
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 1890

ncncangcnc gcnnncgtga gctcggnatt cggctcgagg tttttgangt atagagatgg 60

cagagacatt cctatttacc tcagagtcag tgaacgaggg acaccctgan aagctctgtg 120

accaaatctc tgatgctgtc ctcgacgctt gcctcgnaca ggacccagac agcaaggttg 180

cntgcgaaac atgcaccaaa accaacttgg tgcatggtct tcggagaaat cacgaccaag 240

gccaatgttg actacgagaa gatagtgcgt gacacctgca ggaacatcgg ctttgtctca 300

aacgatgtgg 310

<210> 1891

<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1891

cagcangcac gcgtacgtaa gctcggaatt cggctcgaga ccaacttggn atggtcttcg 60

gagaaatcac gaccaaggcc aacgttgact acgagaagat agtgcgtgac acctgcagga 120

acantcggct tcgtctcaaa tgatgtggga ctggatgccg acaactgcaa ggtcctcgtc 180

aacattgagc agccgagccc tgatattgct cagggtgtac acggccacct taccaaaaaa 240

cctgaagaaa ttggtgctgg tgaccagggt cacatgtttg gctatgccat 290

<210> 1892
<211> 502
<212> nucleic acid
<213> Glycine max

<400> 1892

tttaaactct ccgcggtcag gtaacggtcn gngaattccc gggncgaccc angcgtccan 60

nccaggcgtc agcccaacgc gtcngtgngg ctgcnagaag annacanaag gggcagcgc 120

ttgatttnag gccaggcang ccccactcat ccancanacc tctcctcgtt cangctnccc 180

ctttctgccc ttcntctacc tttcangttt taaaagtata nagatggcag agacattcct 240

atttacctca gagtcggtga acgagggaca ccctgacaag ctctgctacc aaatctccga 300

tgctgtcctc gacgcttgcc tcgagcanga cccagacagc naagttgcct gcgaaacatn 360

caccatancc aacttggtca tggtcttcgg aganatcacg accaaggcca acgttgacta 420

cgaagaagat agtgcgtgac acctgcagga acatcngntt cgtctcaaat tatgtgggac 480

tggatgccan canctgcaag gt 502

<210> 1893
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1893

tcgcntgcac gcgtacgtaa gctcggaatt cggctcgagn aagttgcctg cganacatgc 60

accaanacca acttggtcat ggtcttcgga gaaatcacga ccaaggccaa cgttgactac 120

gagaagatag tgcgtgacac ctgcaggaac atcggcttcg tctcaaatga tgtgggactg 180

gatgccgaca actgcaaggt cctcgtcaac attgagcngc agagccctga tattgctcag 240

ggtgtacacg gccaccttac caaaaaacct gaagaaannc ntgctg 286

<210> 1894
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 1894

ncgcngcacg cgtacgtaag ctcggaattc ggctcgagca caaagcgggt tactgtctgt 60

tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt aaaatggccc 120

aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac aagctctgtg 180

accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac agcaaggttg 240

cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cggagagatc acaaccaagg 300

ccaacgtgga ctatgagaag attgtg 326

<210> 1895
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 1895

tcgnangcaa gcncngaant cngcncnagc gnnnntagnc nanngtgntt accggcngca 60

agatcantat cgatacttat nggaggatgn ngtgctcatg gtngtggtgc tttctccggc 120

aaggacccta ccaaggttga taggagtggt gcttacattg tgagacaggc tgctaaganc 180

attgtggcaa gtggactngc cagaaggtgc attgtgcaag tgtcttatgc cattggtgtg 240

cctgagcctt tgtctgtgtt tgttgacacc tatggcactg ganagatccc tgacaaggag 300

atct 304

<210> 1896
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1896

ncgtcgcatg cacgcgtacg tnagctcgga attcggctcg agctgtgctt ggctgaggcc 60

agatggcaag acacaagtaa ctgttgagta ctacaatgac aatggtgcca tggttccagt 120

tcgtgtccac actgtcctaa tttccaccca acatgatgac nangtgagca atgaccaaat 180

tgctgctgac cttaaagagc atgttatcaa gcctgtcatt cctgagaagt acctggatga 240

gaagaccatc ttccacctta acccttctgg ccg 273

<210> 1897
<211> 334
<212> nucleic acid
<213> Glycine max

<400> 1897

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cagcacaaag cgggttactg 60

ncctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaagacca acatggtgat ggttttcgga gagatcacaa 300

ccaaggccaa cgtggactat gagaagattg tgcg 334

<210> 1898
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 1898

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgagn cctcacagag gttaggaaga 60

atggcacctg tgcttggttg aggccagatg gtaagacaca agtaaccgtc gagtactaca 120

atgacaatgg tgccatggtt ccagttcgtg tccacactgt cctaatttcc acccaacatg 180

acgacctgtg agccatgatc aaattgctgc ggaccttaaa gancatgtta tcaagcctgt 240

cattcctgag aagtaccttg atgagaagac catcttccac ttaacccttc tgg 293

<210> 1899
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 1899

cacctctcct cgttcacgct accccttcct gctcttcttc tacctttcaa gttttaaaag 60

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 120

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 180

cancaaagtt gcctgcgaaa catgcaccaa aaccaacttg gttcatggtc ttcggagaaa 240

tcacgaccaa ggccaacgtt gactacgaga agatagtgcg tgacacctgc aggaacatcg 300

gcttcgtctc aaatga 316

<210> 1900
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 1900

ttcctattta cctcagagtc ggtgaacgag ggacaccctg acaagctctg cgaccaaatc 60

tccgatgctg tcctacgacg cttgcctcga gcaggaccca gacagcaaag ttgcctgcga 120

aacatgcacc aaaaccaact tggtcatggt cttcggagaa atcacgacca aggccaacgt 180

tgactacgag aagatagtgc gtnacactgg agganacatg ggcttcgtct naaatgntgn 240

gggactggat cccganaant gaaggtcncg aaaatntga 279

<210> 1901
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1901

cgctgcacgc gtacgtaagc tcggaattcg gctcgagatg ctgtcctcga cgcttgcctc 60

gagcaggacc cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa cttggtcatg 120

gtcttcggag aaatcacgac caaggccaac gttgactacg agaagatagt gcgtgacacc 180

tgcaggaaca tcggcttcgt ctcaaatgat gtgggactgg atgccgacaa ctgcaaggtt 240

cctcgttcaa cattgagcag cagagccctg atattgctca gggtg 285

<210> 1902
<211> 282
<212> nucleic acid

<213> Glycine max

<400> 1902

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag caggacccag acagcaaagt 60

tgcctgcgaa acatgcaaaa accaacttgg tcatggtctt cggagaaatc acgaccaagg 120

ccaacgttga ctacgagaag atagtgcgtg acacctgcag gaacatcggc ttcgtctcaa 180

atgatgtggg actggatgcc gacaactgca aggtcctcgt caacattgag cagcagagcc 240

ctgatattgc tcagggtgta cacggccacc ttaccaaaaa ac 282

<210> 1903
<211> 476
<212> nucleic acid
<213> Glycine max

<400> 1903

tttactnnnc cngngccatg taanagtana gaagtcccgg gccgacccac gngtcnntac 60

ggctgcgaga agacgacaga agggggcagc gcttgatttg aggccaggca agccccactc 120

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcna cctttcaagt 180

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 240

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcat 300

gacccagaca gcaaagttgc ctgcgaaaca tgcaccagaa ccaacttggt catggtcttc 360

ggagaaatca cgaccatggg caacgttgac taccagaaga taagtgcgtg acacctgcag 420

gaacatcggn ttcgtctcaa atgatgtggg actggatgcc nacaatctgg anangg 476

<210> 1904
<211> 496
<212> nucleic acid
<213> Glycine max

<400> 1904

aactttcgtg ccagnccggt caagaatncc gggtcgaccc acgcgtccgt acggctgcga 60

gaagacgaca gaagggtacg gctgcgagaa gacgacagag gggcagcgc ttgatttgag 120

gccaggcaag ccccactcaa ccaccacacc tctcctcgtt cacgctaccc ctttctgctc 180

ttcttctacc tttcaagttt taaaagtata aagatggcag agacattcct atttacctca 240

gagtcggtga acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc 300

gacgcttgcc tcgagcagga cccagacagc aaagttgcct gcgaaacatg caccaaaacc 360

aacttggtca tggtcttcgg agaaatcacg accaaggcca acgttgacta cgaagaagat 420

agtgcgtgac acctgcagga acatcggctt cgtctcaaat gatgtgggac tgggatgccg 480

acaactgcaa ngtcct 496

<210> 1905
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 1905

nannatcgcn tgcacgcgta cgtnagctcg gaattcggct cgagnntgga ttcatctctg 60

atgatgttgg tcttgatgct gacaaatgca aggtgttggt caacattgag cagcagagcc 120

ctgatatcgc ccagggtgtg cacggtcact tcaccaagcg cccagaggag gttggtgctg 180

gtgaccaggg tcacatgttt ggctatgcca ctgatgaaac ccctgagtac atgcccctca 240

gccatnt 247

<210> 1906
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1906

atncacatgt cacangcacg cgtacgtaag ctcggaattc ggctcgagnc tntcncttgt 60

ntgtgnatgc tgacacttat ggcactggga agatccctga caaggaaatc ctcagnattg 120

tgaaggagag ttttgacttc aggcctggnn tgatctccat caaccttgnt ctcaagaggg 180

gtggaaatgg caggttcttg aagactgctg catatggnca ctttggcaga natgacccng 240

acttcacatg ggaantggtn angcgactca aggggganna ggtaccagct tanctanaag 300

ggnctcct 308

<210> 1907
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 1907

ancgnactgc acgcgtacgt aagctcggaa ttcggctcga gaaagtataa agatggcaga 60

gncattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc tctgcgacca 120

aatctccgat gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcctg 180

cgaaacatgc accaaaacca acttggtcat ggtcttcgga gaaatcacga ccaaggccaa 240

cgttgactac gagaagatat ngngtgacac ctgcaggaac atcggcttcg tc 292

<210> 1908
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1908

agtcgcangc acgcgtacgt aanctcggaa ttcggctcga ggtttggcta tgccactgta 60

tgaaacccct gagtacatgc cctcagcca tgtccttgca accaaactcg gtgctcgcct 120

caccgaggtt aggaaaaatg gtacctgtgc ttggctgagg ccagatggca agacacnagt 180

aactgttgag tactacaatg acaatggtgc catggttcca gttcgtgtcc acactgtcct 240

aatntncacc caacatgatg annengtgag caatgaccaa attgctgctg gaccttaaag 300

<210> 1909
<211> 458
<212> nucleic acid
<213> Glycine max

<400> 1909

atttcaggtg gtcttatagg ccaanaatga cgtaagacgc acgcgtncgt aanctcggaa 60

ttcggctcga gggccanggc aagccccact caaccaccac acctctcctc gttcacgcta 120

cccctttctg ctcttcttct acctttcaag ttttaaaagt ataaagatgg cagagacatt 180

cctatttacc tcagagtcgg tgaacgaggg acaccctgac aagctctgcg accaaatctc 240

cgatgctgtc ctcgacgctt gcctcgagca ggacccanac agcaaagttg cctgcgaaac 300

atgcaccaaa accaacttgg ncatggtctt cggagaaatc acgaccaagg ccaacgttga 360

ctacgagaag atagtgcgtg acacctgcag gaacatcggg cttcgtctca aatgatgtgg 420

gactggatgc cgacaantgc aangttctcg tcaacant 458

<210> 1910
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 1910

ngncncangc ncgcntacgt nanctcggaa ttcggctcga gctaccatct tctctctctc 60

ttncttagtg cctccttgcc agangtnaaa atggcccaag aaacttncct atncacatct 120

gantcagtga acgaggggca ccctgacaag ctctgtgacc agatctccga tgctgtgctc 180

gntgcatgct tggagcagga ccctgacagc aaggttgcct gtgaaacctg caccaagacc 240

aacatggtga tggttttcgg agagatcaca accaaggcca acgtggacta tgagaagatt 300

gtgcgtga 308

<210> 1911
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1911

cgtgtacgta agctcggaat tcggctcgag aagtttttga agtatagaga tggcagagac 60

attcctattt acctcagagt cagtgaacga gggacaccct gacaagctct gtgaccaaat 120

ctctgatgct gtcctcgacg cttgcctcga acaggaccca gacagcaagg ttgcctgcga 180

aacatgcacc aaaaccaact tggtcatggt cttcggagaa atcacgacca aggccaatgt 240

ngactacgag aagatagtgc gtgacactgc aggacatngg tttgtccnaa cgngnggncn 300

gncccc 306

<210> 1912
<211> 504
<212> nucleic acid
<213> Glycine max

<400> 1912

aatgncaaac tncncagccg ncctgncnng gtcatagggn ccgacngacc cgtccnaacc 60

acgnatccgc tgncacntgn gcngacgcgt gggctgcnag aagacgacag aaggggcag 120

cgcttgattt gaggccaggc aagccccact caaccaccac acctctcctc gttcacgcta 180

ccccttctg ctcttcttct acctttcaag ttttaaaagt ataaagatgg cagagacatt 240

cctatttacc tcagagtcgg tgaacgaggg acaccctgac aagctctgcg accaaatctc 300

cgatgctgtc ctcgacgctt gcctcgagca ggacccagac agcaaagttg cctgcgaaac 360

atgcaccaaa accaacttgg tcatggtctt cggagaaatc acgaccaang ccaacgttga 420

ctacgagaag atagtgcntg acacctgcac ggaaatnggg ttcntctcaa ttaatttgga 480

acgggtttcc cnaaaactnc aagg 504

<210> 1913
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 1913

tcnatgcacg cgtacgtaag ctcggaattc ggctcgagtc aaggtgtgca cggccacctt 60

cacaaagagg cctgaggaga ttggtgctgg tgaccaaggt catatgttcg gctatgccac 120

tgacgagact cccgagctca tgcccttgag ccatgtcctt gccacgaagc cggtgccaag 180

ctcaccgagg ttcggaagaa cgggacatgc ccttggctga gacctgatgg caagacccaa 240

gtcactgttg agtactacaa tgacaagggt gccatggttc caatccgcg 289

<210> 1914
<211> 345
<212> nucleic acid
<213> Glycine max

<400> 1914

gnattgnagt acgcgtacgt nagctcggaa ttcggctcgn ggacttaaca acaacncana 60

gngggttann gtctgttcaa gctaccatct ctctctctct ttcttagtgn ctccttgcna 120

gaagttaana tggcccaaga nactttccta ttcacatctg aatcagtgaa cgaggggcac 180

cctgacaagc tctgtgacca natctccgat gctgtgctcg atgcatnctt ggagcaggac 240

cctgacagca aggttgcctg tgaaacctgc accaanacna acatggtgat tgttttcgga 300

gagatcacaa ccaaggccaa cgttgactat gagaagattg tgcnt 345

<210> 1915
<211> 331
<212> nucleic acid

<213> Glycine max

<400> 1915

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ntagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca aggccaacgt ggactatgag a 331

<210> 1916
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 1916

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc caaggccaac gtagactatg 60

aaaagattgt ccgcgacaca tgccgcgaaa ttggattcat ctctgatgat gttggtcttg 120

atgctgacaa atgcaaggtg ttggtcaaca ttgagcaaca gagcccggat atcgcccagg 180

gtgtgcacgg ccacttcacc aagcgcccag aggaggttgg tgctggtgac cagggtcacn 240

tgtt 244

<210> 1917
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1917

nnngtngcat gcncgcgtac gtaagctcng nntncggctc tntgcctata tcgtgagnca 60

ggctgcnaag agtgttgtgg naaatggcct tgccagaagg tgcattgtcc nagtttccta 120

tnccattggt gtccctgagc ccttgtcagt gtttatggac acttatggaa ctgggaanat 180

tcctgacaag gngattcttc aaattgtgna ggagaatttc gacttcagac ctggaatgat 240

caccattaac ttggacctta agaggggtgg ccataggttc ctcaagacag 290

<210> 1918

<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1918

nnaagttnan gcacgcntac gtaagctcgg aattcggctc gaggttactg tctgttcaag 60

ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat ggcccaagaa 120

actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagct ctgtgaccag 180

atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa ggttgcctgt 240

gaaacctgca ccaagaccaa catggtgatg gttttcggag agatcacaac caaggccaac 300

gtggactatg agaa 314

<210> 1919
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1919

tattcnnnac gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cactctctct 60

gctcttcttc tacctttcaa gtttttaaag tattaagatg gcagagacat tcctatttac 120

ctcagagtca gtgaacgagg gacaccctga caagctctgc gaccaaatct ccgatgctgt 180

cctcgacgct tgccttgaac aggacccaga cagcaaggtt gcctgcgaaa catgcaccaa 240

gaccaacttg gtcatggtct tcggagagat caccaccaag gccaacgttg actacgagaa 300

gatcgtgcgt g 311

<210> 1920
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 1920

ngcangcacg cgtacgtaag ctcggaattc ggctcgaggc ctcgagcagg acccagacag 60

caaagttgcc tgcgaaacat gcaccaaaac caacttggtc atggtcttcg gagaaatcac 120

gaccaaggcc aacgttgact acgagnagat agtgcgtgac acctgcagga acatcggctt 180

cgtctcaaat gatgtgggac tggatgccga caactgcaag gtcctcgtca acattgagca 240

gcaganccct gatattgctc agggtgtnnc ccggccacct t 281

<210> 1921
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1921

tccgaagtct cangcacgcg tacgtaagct cggaattcgg ctcgagntac ctatggtggg 60

tggggtgctc atggtggagg tgccttttca gggaaggacc ctaccaaggt tgacagaagt 120

ggtgcctata tcgtgaggca ggctgcaaag agtgttgtgg caaatggcct tgccnaaang 180

gtgcnntggc cnangtttcn aaggccatng gtgtccctga gcccttgtca gtgtttgtgg 240

acacttatgg aactgggaag attcctgaca aggngnttct tcaaattgtg aaggngantt 300

cngncttcng acntg 315

<210> 1922
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1922

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ggtggaggtg ccttttcagg 60

gaaggaccct accaaggttg acagaagtgg tgcctatatc gtgaggcagg ctgcaaagag 120

tgttgtggca aatggccttg cagaaggtgc attgtccaag tttcctatgc cattggtgtc 180

cctgagccct tgtcagtgtt tgncgacact tatggaactg ggaagattcc tgacaaggag 240

attcttcaaa ttgtgaagg 259

<210> 1923
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1923

agtcgcatgc acgcgtacgt aagctcggga attcggctcg agacctctca agtttttgaa 60

gtatagagat ggcagngaca ttcctattta cctcagagtc agtgaacgag ggacaccctg 120

acaagctctg tgaccaaatc tcatgctgtc ctcgacgctt gcctcgaaca ggacccagac 180

agcaaggttg cctgcgaaac atgcaccaaa accaacttgg tcatggtctt cggagaaatc 240

acgaccaagg ccaatgttga ctacgagaag atagtgcgtg acacctgcag gaacatcggt 300

<210> 1924
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1924

anncgcangc acgcgtacgt aagctcggaa ttcggctcga gtcaagtttn tgaagtatag 60

agatggcaga gacattccta tttacctcag agtcagtgaa cgagggacac cctgacaagc 120

tctgtgacca aatctctgat gctgtcctcg acgcttgcct cgaacaggac ccagacagca 180

aggttgcctg cgaaacatgc accaaaacca acttggtcca tggtcttcgg agaaatcacg 240

accaaggcca atgttgacta cgagaagata gtgcgtgaca cctgcaggaa 290

<210> 1925
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1925

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcggctcgag cggctcgagg 60

gcaaatggcc ttgccagaag gtgcattgtc caagtttcct atgccattgg tgtcnctgag 120

cccttgtcag tgtttgtgga cacttatgga actgggaaga ttcctgacaa ggagattctt 180

caaattgtga aggagaattt cgacttcaga cctggaatga tcaccattaa cttggacctt 240

aagaggggtg gccataggtt cctcaagaca gctgcttatg gacactttgg aagg 294

<210> 1926
<211> 473
<212> nucleic acid
<213> Glycine max

<400> 1926

anctttgtac gcgccccagg taccggtaaa ggaattccng gctcgaccca cgcgtaagcc 60

cacgcgtccg tacggctgcg agaagacgac agaagggggc agcgcttgat ttgaggccag 120

gcaagcccca ctcaaccacc acacctctcc tcgttcacgc taccccttc tgctcttctt 180

ctacctttca agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc 240

ggtgaacgag ggacaccctg acgagctctg cgaccaaatc tccgatgctg tcctcgacgc 300

ttgcctcgag caggacccag acagcaaagt tgcctgcgaa acatgcacca aaaccaactt 360

ggtcatggtc ttcggagaaa tcacgaccaa ggccaacgtt gactacgaag aagatagtgc 420

gtgacacctg cangaacatc ggcttcgtct caaatgatgt tggaactgga tgc 473

<210> 1927
<211> 490
<212> nucleic acid
<213> Glycine max

<400> 1927

atttnacctt cccgngcccn gtaaaggtca aaganttccc gggncgaccc acgcgtccgc 60

ccacgcgtcc gtacggctgc gagaagacga cagaaggggg gcagcgcttg atttgaggcc 120

aggcaagccc cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc 180

ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag 240

tcggtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac 300

gcttgcctcg agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaaccaac 360

ttggtcatgg tcttcggaga aatcacgacc aaggccaacg ttgactacga agaagatagt 420

gcgtgacacc tgcaggaaca tcggcttcgt ctcaaaatga tgtgggactg gatgccgaca 480

actgnnangg 490

<210> 1928
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 1928

aanagtcgca ngcacgctta cgtnaagctc ggaattcggc tcgagaaagc gggntactgt 60

ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga agttaaaatg 120

gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc 180

tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tgacagcaag 240

gttgcctgtg aaacctgcac caagaccaac atggtgatgg ttttcggaga gatcacaacc 300

aaggccaacg tggactatgn 320

<210> 1929
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1929

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggagattctc aacattgtga 60

aggaaaactt tgatttcagg cctggtatga tctccatcaa ccttgatctc aagaggggtg 120

gaaataacag gtttttgaag actgctgcct atggacactt tggaagagaa gaccctgact 180

tcacatggga agtggtcaaa cccctcaagt gggagaaggc ctaagtaatt cattccactg 240

ctctatgctg gaagtttttt gagcgttgcc cttataatat gtctaatatc catn 294

<210> 1930
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 1930

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggagattctc aacattgtga 60

aggaaaactt tgatttcagg cctggtatga tctccatcaa ccttgatctc aagaggggtg 120

gaaataacag gtttttgaag actgctgcct atggacactt tggaagagaa gaccctgact 180

tcacatggga agtggtcaaa cccctcaagt gggagaaggc ctaagtaatt cattccactg 240

ctctatgctg gaagtttttt gagcgttgcc cttataatat gtctaatatc cataactttc 300

cacg 304

<210> 1931
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 1931

cgcatgcacg cgtacgtnag ctcggaattc ggctcgagct tctacctctc aagtttttga 60

agtatagacn ncggcagaga cattccctat ttaccttcag agttcagtga acgagggaca 120

cnctgacaag ctctgtgacc aaatctctga tgctgtcctc gacgcttgcc tcgaacagga 180

cccagacagc naggttgcct gcgaaacatg caccaaaacc aacttggtca tggtcttcgg 240

agaaatcacg accaaggcca atgttgacta cgagaagata gtgcgtgaca cctgcaggaa 300

catcggcttt gtctcaaacg a 321

<210> 1932
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 1932

cgcatgcacg cgtacgtaag ctcggaattc ggctcgagct tctacctctc aagtttttga 60

agtatagaga tggcagagac attcctattt acctcagagt cagtgaacga gggacaccct 120

gacaagctct gtgaccaaat ctctgatgct gtcctcgacg cttgcctcga acaggaccca 180

gacagcaagg ttgcctgcga aacatgcacc aaaaccaact tggtcatggt cttcggagaa 240

atcacgacca aggccaatgt tgactacgag aaganagtgc g 281

<210> 1933
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 1933

natacatgca cgcgtacgta agctcggaat tcggctcgag ctctctgctc ttcttctacc 60

tttcaagttt ttaaagtatt aagatggcag agacattcct atttacctca gagtcagtga 120

acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc 180

ttgaacagga cccagacagc aaggttgcct gcgaaacatg caccaagacc aacttggtca 240

tggtcttcgg agagatcacc accaaggcca acgttgacta cgagaagatc gt 292

<210> 1934
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1934

ctctgcgncc aaatctccga tgctgtcctc gacgcttgcc ttgaacagga cccagacagc 60

aaggttgcct gcgaaacatg caccaagacc aacttggtca tggtcttcgg agagatcacc 120

accaaggcca acgttgacta cgagaagatc gtgcgtgaca cctgnaggaa catcggcttc 180

gtctcaancg atgtgggact tgatgctgac aactgccaag gtncntgnna acattgaggn 240

nncagagccc tggatattgc ccaggg 266

<210> 1935
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 1935

cgcnnaangc gtacgtnagc tcggaattcg gctcgagncg ggttactgtc tgttcaagct 60

accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg cccaagaaac 120

tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct gtgaccagat 180

ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg ttgcctgtga 240

aacctgcacc aagaccaaca tggtgatggt tttcggagag atcacaacca aggccaacgt 300

ggactatgag 310

<210> 1936
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1936

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcaacagagt cctgatattg 60

ctcaaggtgt gcacggccac ctcacaaaga ggcctgagga gattggtgct ggtgaccaag 120

gtcatatgtt cggctatgcc actgacgaga ctcccgagct catgcccttg agccatgtcc 180

ttgccacgaa gctcggtgcc aagctcaccg aggttcggaa gaacggaca tgcccttggc 240

tgagacctga tggaccactg ntgantgatt acgatcacga ttaattcggc cccgacagt 299

<210> 1937
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1937

ncnnacgcan gcacgcgtac gtnagctcgg aattcggctc gagctctcaa gtttttgaag 60

tatagagatg gcagagacat tcctatttac ctcagagtca gtgaacgagg gacaccctga 120

caagcttctg tgaccnaaat ctctgatgct gtcctcgacg cttgcctcga acaggaccca 180

gacagcaagg ttgcctgcga aacatgcacc aaaaccaact tggtcatggt cttcggagaa 240

atcacgacca aggccaatgt tgactacgag aagatagtgc gtgacacctg caggaacatc 300

ggctttgtct t 311

<210> 1938
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 1938

gatgcacgcg tacgtaagct cggaattcgg ctcgagcaca aagcgggtta ctgtctgttc 60

aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa aatggcccaa 120

gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa gctctgtgac 180

cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag caangttgcc 240

tgtgaaacct gcaccaagac caacatggta tggttttcgg agagatcaca accaaggcca 300

acgtggacta tgagaagat 319

<210> 1939
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1939

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cggctcgagg cacgctctgc 60

ttccagcgag tgttctttct tcgtttcaac accttaattt gcanacgctg cttcttcccg 120

cttgagaaat ggcacaagaa acctttctat tcacatctga atctgtaaac gagggtcacc 180

ccgacaagct gtgcgaccag atctctgatg cagtgctcga tgcgtgcctt gaacaggacc 240

ctgacagcaa ggttgcctgt gagacatgca ccaagaccaa catggtcatg gtctttggag 300

agatcacaac caagg 315

<210> 1940
<211> 303
<212> nucleic acid

<213> Glycine max

<400> 1940

cgcangcacg cgtacgtaag ctcggaattc ggctcgaggt cttgatgctg acaactgcaa 60

ggtcctcgtc aacattgagc aacagagtcc tgatattgct caaggtgtgc acggccacct 120

cacaaagagg cctgaggaga ttggtgctgn tgaccaaggt catatgttcg gctatgccan 180

tganganact cccgagctca tgcccttgag ccatgtcctt gccacgaagc tcggtgccaa 240

gtctcaccga ggttnggnag aacgggacat cccctgggnt gagacntgnt ggcaaagncc 300

aaa 303

<210> 1941
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 1941

tcgctgcacg cgtacgtaag ctcggaattc ngctcgaggc cccactcaac caccacacct 60

ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt aaaagtataa 120

agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc 180

tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac ccagacagca 240

aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga gaaatcacga 300

ccaaggccaa cgttgactac gagaagatag tgcgt 335

<210> 1942
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1942

tcgcangcnc gcgtacgtna gctcggaatt cggctcgagg ggattctcaa cattgtgaag 60

gaaaactttg atttcaggcc tggtatgatc tccatcaacc ttgatctcaa gaggggtgga 120

aataacaggt ttttgaagac tgctgcctat ggacactttg gaagagaaga ccctgacttc 180

acatgggaag tggtcaaacc cctcaagtgg gagaaggcct aagtaattca ttccactgct 240

ctatgctgga agtttttga gcgttgccct ataatatgtc taata 285

<210> 1943
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 1943

ngtctcangc acncgtacgt aagctnggaa ttcggctcna ggtctgttcn ngctaccatc 60

tctctnctct ctttcttagt gcctccttgc cagaagttaa antggcccaa gaaactttcc 120

tattcacatc tgaatnagtg aacgaggggc accctgacaa gctctgtgac cagatctccg 180

atgctgtgct cgatgcatgc ttggagcagg accctgacag canngttgcc tgtgaaacct 240

gcaccaagac caacatggtg atggttttcg gagagatcac naccaaggnc aacgtggact 300

atgagaagat 310

<210> 1944
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1944

gtcgcatgca cgcgtacgta agctcgggaa ttcggctcga ggttaggttc tgcacgctct 60

gcttccagcg agtgttcttt cttcgtttca acaccttaat ttgcacacgc tgcttcttca 120

gcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa cgagggtcac 180

cccgacaagc tgtgcgacca gatctctgat gcagtgctcg atgcgtgcct tgaacaggac 240

cctgacagca aggttgcctg tgagacatgc accaagacca acatggtcat ggtctttgga 300

gagatcacaa ccaaggc 317

<210> 1945
<211> 331
<212> nucleic acid
<213> Glycine max

<400> 1945

tngnnngcac gcgtacgtaa gctcggaatt cggctcgagc ggctcgagtt tgggagttag 60

gttctgcacg ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct taatttgcac 120

acgctgcttc ttcagcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg 180

taaacgaggg tcaccccgac aagctgtgcg accagatctc tgatgcagtg ctcgatgcgt 240

gccttgaaca ggaccctgac agcaaggttg cctgtgagac atgcaccaag accaacatgg 300

tcatggtctt tggagagatc acaaccaagg c 331

<210> 1946
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1946

nncacgcgta cgtaagctcg gaattcggct cgagnggagt taggttctgc acgctctgct 60

tccagcgagt gttctttctt cgtttcaaca ccttaatttg cacacgctgc ttcttcngct 120

tgagaaatgg cacaagaaac ctttctattc acatctgaat ctgtaaacga gggtcacccc 180

gacaagctgt gcgaccagat ctctgatgca gtgctcgatg cgtgccttga acaggaccct 240

gacagcaagg ttgcctgtga gacatgcacc aagaccaaca tggtcatggt ctttggagag 300

atcacaacca aggc 314

<210> 1947
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1947

ctcgnatgca cgcgtacgta agctcggaat tcggctcgag gcacgctctg cttccagcga 60

gtgttctttc ttcgtttcaa caccttaatt tgcacacgct gcttcttcag cttgagaaat 120

ggcacaagaa acctttctat tcacatctga atctgtaaac gagggtcacc ccgacaagct 180

gtgcgaccag atctctgatg cagtgctcga tgcgtgcctt gaacaggacc ctgacagcaa 240

ggttgcctgt gagacatgca ccaagaccaa catggtcatg gtctttggag agatcacaac 300

caaggc 306

<210> 1948
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 1948

atgngagtcg cangcncgcg tacgtnagct cggaattcgg ctcgaggnga ttctcaacat 60

tgtgaaggaa aactttgatt tcaggcctgg tatgatctcc atcaaccttg atctcaagag 120

gggtggaaat aacaggtttt tgaagactgc tgcctatgga cactttggaa gagaagaccc 180

tgacttcaca tgggaagtgg tcaaacccct caagtgggag aaggcctaag taattcattc 240

cactgctcta tgctggaagt tttttgagcg ttgcccttat aatatgtcta atatcca 297

<210> 1949
<211> 217
<212> nucleic acid
<213> Glycine max

<400> 1949

gcgtacgtaa gctcggaatt cggctcgagg acaaatgcaa ggtgttggtc aacattgagc 60

agcagagccc tgatatcgcc cagggtgtgc acggtcactt caccaagcgc ccagaggagg 120

ttggtgctgg tgaccagggt cacatgtttg gctatgccac tgatgaaacc cctgagtaca 180

tgcccctcag ccatgtcctt gcaaccaaac tcggtgc 217

<210> 1950
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 1950

agnnaangca cgcgtacgta agctcggaat tcggctcgag actctctctg ctcttcttct 60

acctttcaag tttttaaagt attaagatgg cagagacatt cctatttacc tcagagtcag 120

tgaacgaggg acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt 180

gccttgaaca ggacccagac agcaaggttg cctgcgaaac atgcaccaag accaacttgg 240

tcatggtctt cggagagatc accaccaagg ccaacgttga ctacgagaag a 291

<210> 1951
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 1951

gtcgcanntt ngcgtacgta agctcggaat tcggctcgag actctctctg ctcttcttct 60

acctttcaag tttttaaagt attaagatgg cagagacatt cctatttacc tcagagtcag 120

tgaacgaggg acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt 180

gccttgaaca ggacccagac agcaaggttg cctgcgaaac atgcaccaag accaacttgg 240

tcatggtctt cggagagatc accaccaagg ccaacgttga ctacgagaag a 291

<210> 1952
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 1952

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gttaggttct gcacgctctg 60

cttccagcga gtgttctttc ttcgtttcaa caccttaatt tgcacacgct gcttcttcag 120

cttgagaaat ggcacaagaa acctttctat tcacatctga atctgtaaac gagggtcacc 180

ccgacaagct gtgcgaccag atctctgatg cagtgctcga tgcgtgcctt gaacaggacc 240

ctgacagcaa ggttgcctgt gagacatgca ccaagaccaa catggtcatg gtctttggag 300

agatcacaac caaggccag 319

<210> 1953
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 1953

gtcgnangca cgcgtacgta agctcggaat tcggctcgag tctctctgtt ctcttctacc 60

tctcaagttt ttgaagtata gagatggcag agacattcct atttacctca gagtcagtga 120

acgagggaca ccctgacaag ctctgtgacc aaatctctga tgctgtcctc gacgcttgcc 180

tcgaacagga cccagacagc aaggttgcct gcgaaacatg caccaaaacc aacttggtca 240

tggtcttcgg agaaatcacg accaaggcca atgttgacta cgagaaga 288

<210> 1954
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1954

acctctcaag tttttgaagt atagagatgg cagagacatt cctatttacc tcagagtcag 60

tgaacgaggg acaccctgac aagctctgtg accaaatctc tgatgctgtc ctcgacgctt 120

gcctcgaaca ggacccagac agcaaggttg cctgcgaaac atgcaccaaa accaacttgg 180

tcatggtctt cggagaaatc acgaccaagg ccaatgttga ctacgagaag atatgcgtga 240

cactgcag 248

<210> 1955
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 1955

cgcangcacg cgtacgtnag ctcggaattc ggctcgagnt ttgaaccctt ctggcaggtt 60

tgtcattgga gggccgcatg gngatgctgg tctcaccggc ngcaagntca ncatcgacac 120

ctatgntcng atggggtgca catggtggtg gtgccttctn tgggaaggat ccgccaangt 180

tgataggagt ggtgcctaca ttgtgaggca agctgcaaag agcattgttn caaatggant 240

tgctaggagg gcaattgtgc aagtttccta tgccattggt gtgcctganc cntgtctgtg 300

nttgttnac 309

<210> 1956
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 1956

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gggtggaggt gccttttcag 60

ggaaggaccc taccaaggtt gacagaagtg gtgcctatat cgtgaggcag gctgcaaaga 120

gtgttgtggc aaatggcctt gccagaaggt gcattgtcca agtttcctat gccattggtg 180

tccctgagcc ctgtcagtgt ttgtggacac ttatggaact gggaagattc ctgacaagga 240

gattcttcaa atgtgaagga gaattcgact tcagacctgg aatgatcacc at 292

<210> 1957
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1957

tgcatgcacg cgtacgtaag ctcggaattc ggctcgagta acaacagcac aaagcgggtt 60

actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg ccagaagtta 120

aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg caccctgaca 180

agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag gaccctgaca 240

gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc ggagagatca 300

caaccaaggc caacgtg 317

<210> 1958
<211> 219
<212> nucleic acid
<213> Glycine max

<400> 1958

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggagaga tcacaaccaa ggccaacgt 219

<210> 1959
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 1959

tcgatgcacn cgtacgtgag ctcggaattc ggctcgaggc gggtnnctgt ctgttcaagc 60

taccatctct ctctctcttt cttagtgcct ccntgccaga agttaaaatg gcccaagaaa 120

ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc tgtgaccaga 180

tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tgacagcaag gttgcctgtg 240

aaacctgcac caagaccaac atggtgatgg ttttcggaga ggtcacaacc aaggccaacg 300

tggatatgan aagattgtgc gtgac 325

<210> 1960
<211> 316
<212> nucleic acid

<213> Glycine max

<400> 1960

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcacaaagcg ggttactgtc 60

tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg 120

cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct 180

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 240

ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag atcacaacca 300

aggccaacgt ggactn 316

<210> 1961
<211> 495
<212> nucleic acid
<213> Glycine max

<400> 1961

ggnnnnnnnn aatttactct gcccgncagg tacangtaca gaattcccgg ntcgacccac 60

gcgtcagtac ggctgcgaga agacgacaga agggggcagc gcttgatttg aggccaggca 120

agccccactc aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta 180

cctttcaagt tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt 240

gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg 300

cctcgagcag gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt 360

catggtcttc ggagaaatca cgaccaangc caacgttgac tacganaaga tatgcgtgac 420

acctgcaagg aacatcggct tctctcaaat gatgttggga ctggatgccg acaactgcaa 480

ggtctcgtca acatt 495

<210> 1962
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1962

agtcgcngca cgcgtacgta aactcggaat tcggctcnag cnaggttgat aggnatggtg 60

cttacattgt gagacaggct gctaaganca ttgtggcaag tggacttgcc agaaggtgca 120

ttgtagcaag tgtcttangc cattggtgtg cctgagcctt tgtctgtgtt tnttgacacc 180

tatggcactg ggaagatcca tgataaggag attctcaaca ttgngaagga aaactttgat 240

ttcangcctg gnatgatctc catcaacctt 270

<210> 1963
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 1963

tgcaccaaaa ccaacttggt catggtcttc ggagaaatca cgancaaggc caacgnttga 60

ctacggagaa gnnatgcgnt gaacacctgg caggnccatc ggcttcgtct caaatnangt 120

gggactgccn tgccgacaac tgcaaggtcc tcgtcaacat tgagcagcag agccctgata 180

ttgctcaggg tgtacacggc caccttacca aaaaacctga agaaattggt gctggtgacc 240

agggtcacat gtttggcnat gccactgatg aaacccctga ct 282

<210> 1964
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1964

nngttcntgc acgcgtacgt cagctcggaa ttcggctcga ggcgggttac tgtctgttca 60

agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa atggcccaag 120

aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag ctctgtgacc 180

agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtgaaacctg caccaagacc aacatggtga tggttttcgg agagntnaca accaaggcca 300

acgtgg 306

<210> 1965
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 1965

gcangcacgc gtacgtaagc tcggaattcg gctcgaggac ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcggagaga 300

ncacaaccaa ggccaag 317

<210> 1966
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 1966

tcgtangtaa gctcggaatt cggctcgagg cgggncactg tctgttcaag ctaccatctc 60

tctctctctt tcttagtgcc tccttgccag aagttaaaat ggcccaagaa actttcctat 120

tcacatctga atcagtgaac gaggggcacc ctgacaagct ctgtgaccag atctccgacn 180

ctgtgctcga tgcatgcttg gancaggacc ctgacagcaa ggttgcctgt gaaacctgca 240

ccaagaccaa catggtgatg gttttcggag agatcacaac caaggccaac gtggat 296

<210> 1967
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 1967

acgtcgcatg ctagcgtacg taagctcgga attcggctcg agcacaaagc gggttactgt 60

ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga agttaaaatg 120

gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc 180

tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tgacagcaag 240

gttgcctgtg aaacctgcac caagaccaac atggtgatgg ttttcggaga gatcacaacc 300

aaggccacgt ggactatg 318

<210> 1968
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 1968

gtcncatgca cgcgtacgta agctcggaat tcggctcgag acagcacaaa gcgggttact 60

gtntgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tgggcccaag aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag 180

ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc 240

aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg agagatcaca 300

accaaggcca acg 313

<210> 1969
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 1969

ncgtcgcatg cacgcgtacg taagctcgga attcggctcg agngcagttt taaaagtata 60

aagatggcag agacattcct atttacctac agagtcggtg aacgagggac accctgacaa 120

gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag 180

caaagttgcc tgcgaaacat gcaccaaaac caacttggtc atggtcttcg gagaaatcac 240

gaccaaggcc aacgttgact acgagaagat agtgcgtgac acctgcagga a 291

<210> 1970
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 1970

ntgcantnac gcgtacgtaa gctcggaatt cggctcnagn cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctcncct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcancaagac caacatggtg atggttttcg 300

gagagatcac aaccaaggcc aacgtgg 327

<210> 1971

<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1971

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc cacaccactc tctctgnntc 60

ttcttctacc tttcaagtnt ttaaagtatt aagatggcag agacattcct atttacctca 120

gagtcagtga acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc 180

gacgcttgcc ttgaacagga cccagacagc aaggttgcct gcgaaacatg caccaagacc 240

aacttggtca tggtcttcgg agagatcacc accaaggcca acgttgacta cgag 294

<210> 1972
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 1972

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ntttcaagtt tttaaagtat 60

taagatggca gagacattcc tatntacctc agagtcagtg aacgagggac accctgacaa 120

gctctgcgac caaatctccg atgctgtcct cgacgcttgc cttgaacagg acccagacag 180

caaggttgcc tgcgaaacat gcaccaagac caacttggtc atggtcttcg gagagatcac 240

caccaaggcc aacgttgnct acgagaagtc gtgcgtgaca ctgaggaaca tcg 293

<210> 1973
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 1973

tcgcngcacg cgtacgtaag ctcggaattc ggctcgagcg agccatttgg gagttaggtt 60

ctgcacgctc tgcttccagc gagtgttctt tcttcgnttc aacaccttaa tttgcacacg 120

ctgcttcttc agcttgagaa atggcacaag aaacctttct attcacatct gaatctgtaa 180

acgagggtca ccccgacaag ctgtgcgacc agatctctga tgcagtgctc gatgcgtgcc 240

ttgaacagga ccctggacag caaggttgcc tgtgagacat gcaccaagac caacatggtc 300

atggtctttg gagagatcac aaccaaggcc aacgtagat 339

<210> 1974
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 1974

gtcgcntgca cgcgtacgta agctcggaat tcggctcgag gctacccctt tctgctcttc 60

ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag 120

tcggtgaacg agggacaccc tgacaagctc tgcgaaccaa atctccgatg ctgtcctcga 180

cgcttgcctc gagcaggacc cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa 240

cttggtcatg gtcttcggag aaatcacgac caaggccaac gttgactacg agaagatagt 300

gcgtgac 307

<210> 1975
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 1975

anacgcangc angcgtacgt aagctcggaa ttcggctcga gcaagcccca ctcaaccacc 60

acaccactct ctctgctctt cttctacctt tcaagttttt aaagtattaa gatggcagag 120

acattcctat ttacctcaga gtcagtgaac gagggacacc ctgacaagct ctgcgaccaa 180

atctccgatg ctgtcctcga cgcttgcctt gaacaggacc cagacagcaa ggttgcctgc 240

gaaacatgca ccaagaccaa cttggtcatg gtcttcggag agatcaccac caaggccaag 300

ttgactacga gaagat 316

<210> 1976
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 1976

gtcgcangca cgcgtacgta agctcggaat tcggctcgag acttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc 240

tgacagcaag gttgcctgtg aaacctgcac caagaccaac atggtgatgg ttttcggaga 300

gatcacaacc aaggc 315

<210> 1977
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 1977

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatcacaac caaggc 316

<210> 1978
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 1978

nnagangcac gnacaacgta agctcggaat tcggctcgag caacagcaca aagcgggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag 240

caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg gagagatcac 300

aaccaaggc 309

<210> 1979
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 1979

natgnntacg tnagctcgga attcggctcg agcagcacaa agcgggttac tgtctgttca 60

agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa atggcccaag 120

aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag ctctgtgacc 180

agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtgaaacctg caccaagacc aacatggtga tggttttcgg agagatcaca accaaggc 298

<210> 1980
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1980

tcgcangcac gcgtacgtaa nctcggaatt cggctcgagn ttgggagtta ggttctgcac 60

gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca cacgctgctt 120

cttcagcttg agaaatggca caagaaacct ttctattcac atctgaatct gtaaacgagg 180

gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg tgccttgaac 240

aggaccctga cagcaaggtt gcctgtgaga catgcaccaa gaccaacatg gtcatggtct 300

ttggagagat caca 314

<210> 1981
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 1981

gtcgcatgca cgcgtacgta agctcggaat tcgggctcga gcttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatntct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagnaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatcacaac caaggccaac gtggn 325

<210> 1982
<211> 315
<212> nucleic acid

<213> Glycine max

<400> 1982

gtcgcangca cgcgtacgta agctcggaat tcggctcgag nttgggagtt aggttctgca 60

cgctctgctt ccagcgagtg ttctttcttc gtttcaacac cttaatttgc acacgctgct 120

tcttcagctt gagaaatggc acaagaaacc tttctattca catctgaatc tgtaaacgag 180

ggtcaccccg acaagctgtg cgaccagatc tctgatgcag tgctcgatgc gtgccttgaa 240

caggaccctg acagcaaggt tgcctgtgag acatgcacca agaccaacat ggtcatggtc 300

tttggagaga tcaca 315

<210> 1983
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 1983

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cctcagccat gtccttgcaa 60

ccaaacttgg tgctcgcctc acagaggtta ggaagaatgg cacctgtgct tggttgaggc 120

cagatggtaa gacacaagta accgtcgagt actacaatga caatggtgcc atggttccag 180

ttcgtgtcca cactgtccta atttccaccc aacatgatgn ncctgtgagc aatgatcaaa 240

ttgctgcgga cttaaaggca tgttataaac ctgncatccn ggaaaatact tgnaggaa 298

<210> 1984
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 1984

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcgggttact gtctgttcaa 60

gctaccatct ctctctctct nnccttagtg cctccttgcc agaagttaaa atggcccaag 120

aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag ctctgtgacc 180

agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtgaaacctg caccaagacc aacatggtga tggttttcgg agagatcaca accaaggcc 299

<210> 1985

<211> 306
<212> nucleic acid
<213> Glycine max

<400> 1985

ncgtnncntn nagctcggaa ttcggctcga gcttaacaac agcacaaagc gggttactgt 60

ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga agttaaaatg 120

gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc 180

tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tgacagcaag 240

gttgcctgtg aaacctgcac caagaccaac atggtgatgg ttttcggaga gatcacaacc 300

aaggcc 306

<210> 1986
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1986

gtcncatgca cgcgtacgta agctcggnat tcggctcgag aagcgggtta ctgtctgttc 60

aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa aatggcccaa 120

gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa gctctgtgac 180

cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag caaggttgcc 240

tgtgaaacct gcaccaagac caacatggtg atggttttcg gagagatcac aaccaaggcc 300

<210> 1987
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 1987

gaaccgtngc tggtacgtaa gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 300

agagatcaca accaaggcc 319

<210> 1988
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 1988

gnannngcac gcgtacgtaa gctcggaatt cggctcgaga acaacagcac aaagcgggtt 60

actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg ccagaagtta 120

aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg caccctgaca 180

agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag gaccctgaca 240

gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc ggagagatca 300

caaccaaggc c 311

<210> 1989
<211> 331
<212> nucleic acid
<213> Glycine max

<400> 1989

ctngcangca gcgtacgtaa gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atgggcccaa ganactttcc tnctcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 300

gagagatcac aaccaaggcc aacgtggact a 331

<210> 1990
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 1990

tcaacagtcg catgcacgcg tacgtaagct cggaattcgg ctcgagaaca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca 120

gaagttaaaa tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac 180

cctgacaagc tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac 240

cctgacagca aggttgcctg tgaaacctgc accaagacca acatggtgat ggttttcgga 300

gagatcacaa ccaaggccc 319

<210> 1991
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 1991

ntaangcacg cgtacgtaag ctcggaattc ggctcgaggg acaaatgcaa ggtgttggtc 60

aacattgagc aacagagccc ggatatcgcc cagggtgtgc acggccactt caccaagcgc 120

ccagaggagg ttggtgctgg tgaccagggt cacatgtcac angtatgcca ncgatgncac 180

ccccgagtac atgcccctca gccatgtcct tgcaaccaaa cttggtggnt cgccncacag 240

aggttaggag aattgcactg tgcttggttg aggccagatg gtaagaca 288

<210> 1992
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 1992

nncncngcac gcgtacgtng ctcggaattc ggctcgagct taacaacagc acaaagcggg 60

ttactgtctg ttcaagctac catctctctc tctctttctt agtgcctcct tgccagaagt 120

taaaatggcc caagaaactt tcctattcac atctgaatca gtgaacgagg ggcaccctga 180

caagctctgt gaccagatct ccgatgctgt gctcgatgca tgcttggagc aggaccctga 240

cagcaaggtt gcctgtgaaa cctggcacca agaccaacat ggtgatggtt ttcggagaga 300

tcacaaccaa ggccaagtgg actatgagaa gat 333

<210> 1993
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 1993

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagg ttgagaccaa gacacactcg 60

ttcatatatc tctctgctct tctcttctct tctacctctc aagtttttga agtataaaga 120

tggcagagac attcctattc acctcggagt cagtgaacga gggacaccct gataagctct 180

gcgaccaatc tccgatgctg tcctcgacgc ttgcctcgaa caggacccag acagcaaggt 240

tgcctgcgaa acatgcacca agaccaactt ggtcatggtc ttcggagaga tcaccaccaa 300

ggccaacgtt gactacgaga agatc 325

<210> 1994
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1994

acgtcgcatg cacgcgtacg taagctcgga attcggctcg aggttactgt ctgttcaagc 60

taccatctct ctctctcttt cttagtgcct ccttgccaga agtaaaaatg gcccaagaaa 120

ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc tgtgaccaga 180

tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tgacagcaag gttgcctgtg 240

aaacctggca ccaagaccaa catggtgatg gttttcggng agatcacaac caaggccaag 300

<210> 1995
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 1995

gcgtacgtaa gctcggaatt cggctcgagn aagcnccact tcaaccacca cacnactctc 60

tctgctcttc ttctaccttt caagttttta aagtattaag atggcagaga cattcctatt 120

tacctcagag tcagtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 180

tgtcctcgac gcttgccttg aacaggaccc agacagcaag gttgcctgcg aaacatgcac 240

caagaccaat tggtcatggt cttcggagag atcaccacca aggccaagtt gactacgaga 300

agatcgtgcg tgacactgca gg 322

<210> 1996
<211> 321
<212> nucleic acid

<213>	Glycine max

<400>	1996

tgggagttag gttctgcacg ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct 60

taatttgcac acgctgcttc ttcagcttga gaaatggcac aagaaacctt tctattcaca 120

tctgaatctg taaacgaggg tcaccccgac aagcgtgcga ccagatctct gatgcagtgc 180

tcgatgcgtg ccttgaacag gaccctgaca gcaaggttgc ctgtgagaca tgcaccaaga 240

ccaacatggt catggtcttt ggagagatca caaccaaggc aacgtagata tgagaagatg 300

tcgtgnacat gcgcgaattg g 321

<210>	1997
<211>	303
<212>	nucleic acid
<213>	Glycine max

<400>	1997

tcgcangcac gcgtacgtaa gctcgggaat tcggctcgan ctcgagccga ttcggctcga 60

ggccttttca gggaaggacc ctaccacngg ttgacagaag tgaccgccta tattgtaagg 120

cagnctgcaa agagtgttcg tgggcaaatg gccttgntag aaggtgcatt gtgcaagttt 180

cctatgccat tggtgtccct gagcccttgt cagtgtttgt ggacncttat ggaactggga 240

agattcctga caaggagatt ctgcaaattg tgaaggagaa tttcgacttc agacctggna 300

tga 303

<210>	1998
<211>	328
<212>	nucleic acid
<213>	Glycine max

<400>	1998

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ncagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 300

gagagatcac naccaaggcc aacgtggg 328

<210> 1999
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 1999

tcgcanacnt acgcncggaa tctcggcncg anaacagcac aaagcgggtt actgtctgtt 60

caagctacca tctctctctc tctntcttag tgcctccctt gccagaagtt aaaatggccc 120

aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac aagctctntg 180

accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac agcaangttg 240

cctgtgaaac ctgcaccaag accaacatgg tgatngtttt cggagagatc acaaccaagg 300

cnccg 305

<210> 2000
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2000

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca ggccaagtgg a 321

<210> 2001
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2001

gtcgcatgca cgcgtacgta agctcgggaa ttcggctcga ggtgatttgg gagtttggag 60

cgactgaact aatcattaat ttgcactcgc tgtttcagct tcatcaccct tcttttgcat 120

catttatatc tcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa 180

cgagggtcac cccgacangc tgttcnanca gatctctgat gcagtacttg atgcgtgcct 240

tgaacaggac cctgacagca aggttgcctg tgagacatgc accaagacca acatggtcat 300

ggtcttcgga gagatcacaa ccaaggc 327

<210> 2002
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2002

ntcgnatncn agcntangtn agnnttcggn tcgagatttg ggagttaggt tctgcacgct 60

ctgcttccag cgagtgttct ttcttcgttt caacacctta atttgcacac gctgctttct 120

tcngcttgag aaatggnaca agnnaccttt ctattcacat ctgaatctgt aaacgagggt 180

caccccgaca anctgtgcga ccagatctct gatgcagtgc tcgatgcgtg ccttgaacag 240

gacnctgaca gcaaggttgc ctgtgagaca tgcaccaaga ccaacatggt catggtcttt 300

gganagatca caacca 316

<210> 2003
<211> 334
<212> nucleic acid
<213> Glycine max

<400> 2003

ccncnngccn acccntngnc nncntntcng tcgnngnnnc gtacgtnagc tcggnattcg 60

gctcgngcca agccccactc aaccaccaca ccactctctc tgctcttctt ctacctttca 120

ngtttttaaa gtattaagat ggcagagaca ttcctattta cctcagagtc agtgaacgag 180

ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgccttgaa 240

caggacccag acagcaaggt tgcctgcgaa acatgcacca agaccaactt ggtcatggtc 300

ttcggagaga tcaccaccaa ggccaacgtt gact 334

<210> 2004
<211> 216
<212> nucleic acid
<213> Glycine max

<400> 2004

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctggcacc aagaccaaca 180

tggtgatggt tttcggagag atcacaacca aggcca 216

<210> 2005
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 2005

gnacgacgca ngcacgcgta cgtnagctcg gaattcggct cgagctcatg gtgatgctgg 60

tctcactgga agaaagatca tcattgatac ctatggtggg tggggtgctc atggtggagg 120

tgccttttca gggaaggacc ctaccaaggt tgncagaagt ggtgcctata tcgtgaggca 180

ggctgcaaag agtgttngtg gcaaatggcc ttgccagaag gtgcattgtc caagtttcct 240

atgccattgg gtgtccctga gccctngtca gnggtnggtg gacattatgg nncntgggaa 300

nttcctcaca aggggtttt 319

<210> 2006
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2006

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tcgagccgct cgagccgatt 60

cggctcgagg tggccctcat ggtgntgctg gtctcactgg accgaaagat acntcattga 120

tacctatggt gggtggggac ctcatggtgg aggtgccttt tcagggaagg accctaccaa 180

ggttgacaga agtggtgcct atatngtgag gcaggctgca aanagtgttg tggcaaatgg 240

ccttgccaga aggtgcattg tccaagtttc ctatgcnatt ggtgtccctg agccc 295

<210> 2007
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2007

tatctctctg ttctcttcta cctctcaagt ttttgaagta tagagatggc agagacattc 60

ctatttacct cagagtcagt gaacgaggga caccctgaca agctctgtga ccaaatctct 120

gatgctgtcc tcgacgcttg cctcgaacag gacccagaca gcaaggttgc ctgcgaaaca 180

tgcaccaaaa ccaacttggt catggtcttc ggagaatcac gaccaaggcc aatgtngant 240

acgagaagat atgcgtgacc c 261

<210> 2008
<211> 422
<212> nucleic acid
<213> Glycine max

<400> 2008

caggcaagcn ccactcaacc accacacctc tnctngttca cgctacccgc tttctgctct 60

tcttctacct ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag 120

agtcggtgaa cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctng 180

acgcttgcct cgagcaggac ccanacagca aagttgcctg cgaaacatgc accaaaacca 240

acttggtcat ggtcttcgga gaaatcacga ccaaggccaa cgttgactac gaagaagata 300

gtgcgtgaca cctgcaggaa ccattngnnt tngtctnaaa tgatgtgggg actggatgcc 360

cgacaactgg caaggtcctc gtcnaacatt gancatcaaa agccctggtn ttggttnagg 420

gg 422

<210> 2009
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2009

tcgcngcacn cgtacgtnag ctcggnnttc ggctcgacct cgagccgaat cggctcgagg 60

ggttactgtc tgttcaagct aaccatctct ctctctctac tcntagtgcc tccttgccan 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatcacaa 309

<210> 2010
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2010

ttcaangcag cgtacgtaag ctcggaattc ggctcgagcg gctcgagctc ttctacctct 60

caagtttttg aagtataaag ntggcagaga cattcctatt cacctcggag ttagtgaacg 120

agggacaccc tgataagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 180

aacaggaccc agacagcaag gttgcctgcg aaacatgcac caagaccanc ttggtcatgg 240

nnttcggaga gatcaccacc aaggccaacg ttgactacga 280

<210> 2011
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2011

atgcacgcgt acgtaagctc ggaattcggc tcgaggcaga cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt ttcgggngng 300

atcanaacaa ggg 313

<210> 2012
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2012

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag gcgggttact gtctgttcaa 60

gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa tggcccaaga 120

aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc tctgtgacca 180

gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca aggttgcctg 240

tgaaacctgc accaagacca acatggtgat ggttttcgga gagatcacaa 290

<210> 2013
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2013

agtcgcannc acgcgtacgt aagctcggaa ttcggctcga nggctcgagc ggctcgnggc 60

acggccacct cncaaagagg cctgaggaga ttggtgctgg tnnccaaggt catatgttcg 120

gctatgccac tgacgagact nccgagctca tnnccttgag cnatgtcctt gccacnaagc 180

tccgtgccaa gctcaccgag gttcggaaga acgggacatg cccttggctg agacctgatc 240

gcaagaccca ctccactgtt gagtactaca acgn 274

<210> 2014
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2014

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcacaaagcg ggttactgtc 60

tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg 120

cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct 180

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 240

ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag atcacaacc 299

<210> 2015
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2015

gcngnagcgt acgtaagctc ggaattcggc tcgagcttaa caacagcaca aagcgggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctcttgcc agaagttaaa 120

atgggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag 240

caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg gagagatcac 300

aaccaaggc 309

<210> 2016
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2016

ttaaagtcnc tgcacgcgta cgtaagctcg gaattcggct cgagcggctc gangcgggtt 60

actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg ccagaagtta 120

aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg caccctgaca 180

agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag gaccctgaca 240

gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc ggagagatca 300

caacc 305

<210> 2017
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2017

gnngcaggcg tacgtaagct cggaattcgg ctcgaggcac aaagcgggtt actgtctgtt 60

caagctacca tctctctctc tcttcttagt gcctccttgc cagaagttaa aatggcccaa 120

gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa gctctgtgac 180

cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag caaggttgcc 240

tgtgaaacct gcaccaagac caacatggtg atggttttcg gagagatcac aacc 294

<210> 2018
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2018

tcncangcac gcgtacgtaa gctcgggaat tcggctcgaa gggcagactt aacaacagca 60

caaagcgggt tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt 120

gccgcaagtt aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg 180

gcaccctgac aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca 240

ggaccctgac agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt 300

cggagagatc acaaccaagg c 321

<210> 2019
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2019

gtcgcatgca ngcgtacgtn agctcggaat tcggctcgag cagcacaaag cgggttactg 60

tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat 120

ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagct 180

ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa 240

ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag agatcacaac 300

<210> 2020
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2020

acccagacgt cgcatgcacg cgtacgtaag ctcggaattc ggctcganct cgagccgaat 60

cggctcgagt gcagctgacc tcaaggagca tgacgatcaa gccggtgata cccggagaag 120

taccttgatg agaagaccat tttccacttg aacccctctg gccgttttgt cattggaggt 180

cctcacggtg atgctggtct caccggccgc aagatcatca tcgatactta cggaggatgg 240

ggtgctcatg gtggtggtgc cttctccggg aaggatccca ccaagttgat aggatggtgc 300

ttacatgtga 310

<210> 2021
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 2021

cgcntgcncg cgtacgtaan ctcggaattc ggctcgagca cacctcncct cgttcacgct 60

acccctttct gctcttcttc tacctttcaa gtttnaaaag tataangatg gcagagacat 120

tccnatttac ctcagagtcg gtgaacgagg gacaccctga caagctctgc gaccaaatct 180

ccgatgctgt cctcgacgct tgcctcgagc aggacccaga cagcaaagtt ncctgcgaaa 240

catgcaccaa aaccaacttg gncatggtct tcggaganat cacgaccaag gccaacgttg 300

actacgagaa atagtgcgtg acacct 326

<210> 2022
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2022

gtcgcnngca cgcgtacgtn aagctcggaa ttcggctcga ggcctcacag aggttaggaa 60

gaatggcacc tgtgctggtt gaggccagat ggtaagacac aagtaaccgt cgagtactac 120

aatgacaatg gtgccatggt tccagttcgt gtccacactg tcctaatttc cacccaacat 180

gatgagnctg tgagcaatga tcaaatgctg cggaccttaa agagcatgtt atcaagcctg 240

tcatcctgag aagtaccttg atgagaagac catcttccac cttaaccctc tggccgttt 299

<210> 2023
<211> 545
<212> nucleic acid
<213> Glycine max

<400> 2023

aactgtcnnn cngcgacgcc ngtacgtacc agtccactaa tncccgggtc cacncacgcn 60

tccgtacggc tgcgaagaag acgacagaag ggganactta ctagtnntaa gcatggagtc 120

ctcaantntc tntgcttntn tcttnanctt naagtttttt aaagtattaa gatggcaaga 180

nacattccta tttacctcaa gagtcagtga acgagggaca ccctgacaag ctctgcgacc 240

aaatctccga tgctgtcctc gacgcttgcc ttgaacagga cccagacagc aaggttgcct 300

gcgaaacatg caccaagacc aacttggtca tggtcttcgg gagagattac caccanggcc 360

aacgttgact angagaaaga tngtgcgtga cacctgcagg aatatcggct tcgtctcagg 420

angatntggg acttgatnct gacatctgca angtccttgt aaacattncg cagcatancc 480

ctaatnttgc ccagggtgtt gaacggcacn ttacnntngn acccgnggan ntcggtgctg 540

ggagg 545

<210> 2024
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2024

ccaagcccca ctcaaccacc acaccactct ctctgctctt cttctacctt tcaagttttt 60

aaagtattaa gatggcagag acattcctat ttacctcaga gtcagtgaac gagggacacc 120

ctgacaagct ctgcgaccaa actccgatgc tgtcctcgac gcttgccttg aacaggaccc 180

agacagcaag gttgcctgcg aaacatgcac caagaccaac ttggtcatgg tcttcggaga 240

gatcaccacc aaggccaacg ttgactacga g 271

<210> 2025
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2025

gcaagcccca ctcaaccacc acacctctcc tcgttcacgc taccccttc tgctcttctt 60

ctaacttttc aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt 120

cggtgaacga gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg 180

cttgcctcga gcaggaccca gacagcaaag ttgcctgcga aacatgnacc aaaaccaact 240

tggtcatggt cttcggagaa atcacgacca aggccaagtt gactacgaga agatagt 297

<210> 2026
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2026

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca 310

<210> 2027
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2027

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca 310

<210> 2028
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2028

ngnancctta gagtcgcatg cacgcgtacg taagctcgga attcggctcg aggttaggtt 60

ctgcacgctc tgcttccagc gagtgttctt tcttcgtttc aacaccttaa tttgcanacg 120

ctgcttcttc ngcttgagaa atggcacaag aaacctttct attcacatct gaatctgtaa 180

acgagggtca ccccgacaag ctgtgcgacc agatctctga tgcagtgctc gatgcgtgcc 240

ttgaacagga ccctgacagc aaggttgcct gtgagacatg caccaagacc aacatggtca 300

tggtctttg 309

<210> 2029
<211> 487
<212> nucleic acid
<213> Glycine max

<400> 2029

aactctactt ggncaggccc cggtncagaa atcccggctc gacccacgcg tcagtacggc 60

tgcgagaaga cgacagaagg gggcagcgct tgatttgagg ccaggcaagc cccactcaac 120

caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt 180

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 240

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcangac 300

ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga 360

gaaatcacga acaagggcaa cgttgactac gaaaaagata attgcntgac aacctgcagg 420

gaacatcggc ttcgtctcaa atgatgttgg gactggatgc cgacaactgc aaaggtctcc 480

gtcaaca 487

<210> 2030
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2030

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gccaagcccc actcaaccac 60

cacaccactc tctctgctct tcttctacct ttcaagtttt taaagtatta agatggcaga 120

gacattccta tttacctcag agtcagtgaa cgagggacac cctgacaagc tctgcgacca 180

aatctccgat gctgtcctcg acgcttgcct tgaacaggac ccagacagca aggttgcctg 240

cgaaacatgc accaagacca acttggtcat ggtcttcgga gagatcacca ccaaggcc 298

<210> 2031
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2031

gttgcangcg tacgtaagct cggaattcgg ctcgagtttg ggagttaggt tctgcacgct 60

ctgcttccag cgagtgttct nacttcgttt caacacctta atttgcacac gctgcttctt 120

cagcttgaga aatggcacaa gaaacctttc tattcacatc tgaatctgta aacgagggtc 180

accccgacaa gctgtgcgac cagatctctg atgcagtgct cgatgcgtgc cttgaacagg 240

accctgacag caaggttgcc tgtgagacat gcaccaagac caacatggtc atggtctttg 300

g 301

<210> 2032
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2032

cgtcgcangc acgcgtacgt nagctcggna ttcggctcga gngcacaaag cgggttactg 60

tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat 120

ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagct 180

ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa 240

ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggng agatcac 297

<210> 2033
<211> 332
<212> nucleic acid
<213> Glycine max

<400> 2033

tgcacgcgta cgtaagctcg gaattcggct cgagatttga ggncaggcaa gcccnactca 60

accaccacac ntctcctcgt tnangctacc cctttctncc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgctng cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtcttc 300

ggaganatca cgaccaaggc caacgttgac ta 332

<210> 2034
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2034

tcgcatgcac gcgtacgtna gctcggaatt cggctcgagn acagcacaaa gcgggttact 60

gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgntcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaagacca acatggtgat ggttttcgga gagatcacaa 300

<210> 2035
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2035

ncgcangcac gcatacgtna gctcggaatt cggctcgagc tnaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatcctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtna aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaa 307

<210> 2036
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2036

ccaagcccca ctcaaccacc acaccactct ctctgctctt cttctacctt tcaagttttt 60

aaagtattaa gatggcagag acattcctat ttacctcaga gtcagtgaac gagggacacc 120

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctt gaacaggacc 180

cagacagcaa ggttgcctgc gaaacatgca ccaagaccaa cttggtcatg gtcttcggag 240

agatcaccac caaggccaac gt 262

<210> 2037
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2037

aaatntanan gtcgcangca cgcgtacgta agctcggaat tcggctcgag cttaacaaca 60

gcacaaagcg ggttactgtc tgttcaagct accatctcct ctctctcttt cttagtgcct 120

ccttgccaga agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg 180

aggggcaccc tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg 240

agcaggaccc tgacagcaag gttgcctgtg aaacctgcac caagaccaac atggtgatgg 300

ttttcggaga gatcacaacc aag 323

<210> 2038
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2038

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 300

gagagatcac a 311

<210> 2039
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2039

ttcangcacn cgtacgtaag ctcggaattc ggctcgagca caaagcgggt tactgtctgt 60

tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt aaaatggccc 120

aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac aagctctgtg 180

accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac agcaaggntg 240

cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cggngagatc acaaccaagg 300

n 301

<210> 2040
<211> 307
<212> nucleic acid

<213> Glycine max

<400> 2040

gtngcangca cgcgtacgta agctcggaat tcggctcgag cagcacaaag cgggttactg 60

tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat 120

ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagcc 180

ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa 240

ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag agatcacaac 300

caaggcc 307

<210> 2041
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2041

cgcatgcagt ntacgtaagc tcggaattcn gctcgagcag cacaaagcgg gttactgtct 60

gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag ttaaaatggc 120

tcaagaaact ttcctattca catctgaatc agtgaacgag gaccaccctg acaagctctg 180

tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg acagcaaggt 240

tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcggagaga tcacaaccaa 300

ggc 303

<210> 2042
<211> 486
<212> nucleic acid
<213> Glycine max

<400> 2042

tngcnaactc ttacgcggtt caggtaccgg ttgnngaatt cccggggtcg acccacgcgt 60

caagtacggc tgcgagaaga cgacagaagg gggcagcgct tgatttgagg ccaggcaagc 120

cccactcaac caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct 180

ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa 240

cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct 300

cgagcaggac ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggtcat 360

ggtcttcgga gaaatcacga ccaaggccaa cgttgactac gaagaagata gtgcgtnaca 420

cctgcaggga acatccggnt nntnccaaaa tnangttgga ncgggatccn anaatttgcn 480

aggggt 486

<210> 2043
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2043

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggggcaccct gnacaagctc 60

tgtgaccaga tctccgatgc tgtgctcgat ggcatgcttg gagcaggacc ctgacagcaa 120

ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag agatcacaac 180

caaggccaac gtggactatg agcaagcttg tgncgtgaca catgcaggaa cattggtttt 240

gtctctnatg atgtnggtct tggatgcnna caactgcaag tctcgtcaac atngagcaac 300

agan 304

<210> 2044
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2044

gtcgcangca cgcgtacgta agctcgaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaacctgc accaagacca acatggtgat ggttttcgga 300

gagatcacaa ccaggccang tggan 325

<210> 2045
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2045

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag tgagaaatgg cacaagaaac 60

ctttctattc acatctgaat ctgtaaacga gggtcacccc gacaagctgt gcgaccagat 120

ctctgatgca gtgctcgatg cgtgccttga acaggaccct gacagcaagg ttgcctgtga 180

gacatggcac caagaccaac atggtcatgg ttctttggag agatncacaa ccaagggcca 240

acgtagacta tgagaagatt gttcctgnac acatgccggc gaantggatt ncannccg 298

<210> 2046
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2046

gtcgcatgca cncgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg aggttttcgg 300

agagatcaca accaaggc 318

<210> 2047
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2047

gngtcgnang cacgcgtacg tnagctcgga atgcggctcg aggggttact gtctgttcaa 60

gctaccatct ctcnctctct ttcttagtgc ctccttgcca gaagnnaaan tngcccaaga 120

aactttccta ttcnnatctg aatcagtgaa cgaggggcac cctgacaagc tctgtgacca 180

gatctccgat gctgtgctcg atgcatgcnt ggngcaggac nctgacagca aggttncctg 240

tgaaacntgc accaagacca acatggtgat ggttttcgga gagatcacaa ccaaggccaa 300

cg 302

<210> 2048

<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2048

tcgnangcac gcgtacgtaa gctcggaatt cggctcnagt ttgggagtta ggttctgcac 60

gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca cacgctgctt 120

cttcngcttg agaaatggca caagaaacct ttctattcac atctgaatct gtaaacgagg 180

gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg tgccttgaac 240

aggaccctga cagcaaggtt gcctgtgaga catgcaccaa gaccaacatg gtcatggtct 300

t 301

<210> 2049
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2049

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tctctgctct tctcttctct 60

tctacctctc aagtttttga agtataaaga tggcagagac attcctattc acctcggagt 120

cagtgaacga gggacaccct gataagctct gcgaccaaat ctccgatgct gtcctcgacg 180

cttgcctcga acaggaccca gacagcaagg ttgcctgcga aacatgcacc aagaccaact 240

tggtcatggt cttcggagag atcaccacca agg 273

<210> 2050
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2050

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tgcacgctct gcttccagcg 60

agtgttcttt cttcgtttca acaccttaat ttgcanacgc tgcttcttct ggcttgagaa 120

atggcacaag aaacctttct attcacatct gaatctgtaa acgagggtca ccccgacaag 180

ctgtgcgacc agatctctga tgcagtgctc gatgcgtgcc ttgaacagga ccctgacagc 240

aaggttgcct gtgagacatg caccaagacc aacatggtca tggtcttgga gagatcacaa 300

ccagggccaa cgt 313

<210> 2051
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2051

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaanct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatcacaac ca 312

<210> 2052
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2052

gcgtacgtaa gctcggaatt cngctcgagg ccccactcaa ccaccacacc tctcctcgtt 60

cacgctaccc ctttctgctc ttcttctacc tttcaagttt taaaagtata aagatggcag 120

agacattcct atttacctca gagtcggtga acgagggaca ccctgacaag ctctgcgacc 180

aaatctccga tgctgtcctc gacgcttgnc tcgagcagga cccagacagc aaagttgcct 240

gcgaaacatg caccaaaacc aacttggtca tggtcttcgg agaaatcacg accaaggcca 300

acgttgat 308

<210> 2053
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2053

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgagg ttaggttctg cacgctctgc 60

ttccagcgag tgttctttct tcgtttcaac accttaattt gcacacgctg cttcttcagc 120

ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg agggtcaccc 180

cgacaagctg tgcgaccaga tctctgatgc agtgctcgat gcgtgccttg aacaggaccc 240

tgacagcaag gttgcctgtg agacatgnac caagaccaac atggtcatgg tctttggn 298

<210> 2054
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2054

nanangangt cgcangcacg cgtacgtnag ctcggnattc ggctcgaggn aagccccact 60

caaccaccac accactctct ctgctcttct tctacctttc aagtttttaa agtattaaga 120

tggcagagac attcctattt acctcagagt cagtgaacga gggacaccct gacaagctct 180

gcgaccaaat ctccgatgct gtcctcgacg cttgccttga acaggaccca gacagcaagg 240

ttgcctgcga aacatgcacc aagaccaact tggtcatggt cttcggagag atcaccacca 300

nggc 304

<210> 2055
<211> 481
<212> nucleic acid
<213> Glycine max

<400> 2055

aaactccacc gcccaggtac cggtacaaga attcccggnt cgacccacgc gtcnggcgag 60

aagacnacag aagggtacgg ctgcgagaag acgacagaag ggtacggctg cgagaanacg 120

acagaagggt acggctgcga agaagacgac agaagggtac ggctgcgaga agacgacaga 180

agggtacggc tgcgagaaga cgacagaang gtacggctgc gagaagacga cagaaggggg 240

acacttatgg aactgggaag attcctgaca aggagattct tcaaattgtg aaggagaatt 300

tcgacttcag acctggaatg atcaccatta acttggacct taagaggggt ggccataggt 360

tcctcaagac agctgcttat ggacactttg gaagggatga ccctgacttc acctgggaag 420

ttgtgaagcc actcaantct gaaaaacctc caacctaaga atggttgtna atttaancnc 480

c 481

<210> 2056

<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2056

nacgtcgcat gcacgcgtac gtaagctcgg aattcggctc gagtaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat gcatgcttcg agcaggaccc 240

tgacagcaag gttgccntnt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatcacaac caa 313

<210> 2057
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2057

tcncatgcac gcgtacgtaa gctcggaatt cggctcgagg ttactgtctg ttcaagctac 60

catctctctc tctctttctt agtgcctcct tgccagaagt taaaatggcc caagaaactt 120

tcctattcac atctgaatca gtgaacgagg ggcaccctga caagctctgt gaccagatct 180

ccgatgctgt gctcgatgca tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa 240

cctgacacca agaccaacat ggtgatggtt ttcggagaga tcacaaccaa ggccaacgtg 300

gatatg 306

<210> 2058
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2058

angcacncgt acgtnagctc ggnattcggc tcgagncana cttaacanca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaaganac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctggcac caagaccaac atggtgatgg ttttcggaga 300

gatcacaacc aaggccaagt ggata 325

<210> 2059
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2059

tcgcatgcac gcgtacgtna gctcggaatt cggctcgagc tttctgctct tcttctacct 60

ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag antcggtgaa 120

cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct 180

cgagcaggac ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggttca 240

tggtcttcgg agaaatcacg accaaggcca acgttgacta cgagaa 286

<210> 2060
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2060

gtcgcangca cgcgtacgta aagctcggaa ttcggctcga gnaaagatgg cagagacatt 60

cctatttacc tcagagtcgg tgaacgaggg acaccctgac caagctctgc gaccaaatct 120

ccgatgctgt cctcgacgct tgcctcgagc aggncccaga tagcaaagtt ncntgcgana 180

catgcaccan aaccnncttg gtcatggtct tcggagnnat cacgaccang gcnancgttg 240

actanganan gatantgngt gacacctnca ggnacatcgg 280

<210> 2061
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2061

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtgatttgga gtttggagcg 60

actgaactaa tcattaattt gcactcgctg tttcagcttc atcacccttc ttttgcatca 120

tttatatctc ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg 180

agggtcaccc cgacaagctg tgcnaccaga tctctgatgc agtacttgat gcgtgccttg 240

ancaggaccc tgacagcaag gttgcctgtg agacatgcac cnagaccaac aggtcatggt 300

cttcggagag atcacaacca aggc 324

<210> 2062
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2062

ganacgtacg tnagctcgga attcggctcg agncttaaca acagcacaaa gcgggttact 60

gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaagacca acatggtgat ggtttcggag agatcacaac 300

<210> 2063
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2063

ntcgcanaca cgcgtacgtn agcncggaat tcggctcgag gtggcaaatg gccttnccag 60

aaggtgcatt gtccaagttt cctatgccat tggtgtccct gagcccttgt cagtgtttgt 120

ggacacttat ggaactggga agattcctga caaggagatt cttcaaattg tgaaggagaa 180

tttcgacttc agacctggaa tgatcaccat taacttggnc ttaaann 227

<210> 2064
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2064

tncntcgaan nnangctnac ntnagaatgn nnctcgannc aagcnccant caaccancac 60

acntctcctc gttcacgcta ccccttctg gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtct tcggagaaat 300

cacgaccaag gcc 313

<210> 2065
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2065

nttgcannca cncgtacgtn agctcggnan tcggctcgag ncagacttaa caacagcaca 60

nagcgggtta ctntctgttc aagctaccat ctctctctct ctttcttagt ggcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg 180

caccctgaca agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc 300

ggagagatca n 311

<210> 2066
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2066

cgcatgcata agtacgtaag ctcggaattc ngctcgagca agccccactc aaccaccaca 60

cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacaaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtcttc ggagaaatca 300

cgaccaaggc caacgtt 317

<210> 2067
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2067

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

agatca 306

<210> 2068
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2068

ancagtcgna tgcacgcgta cgtaagctcg gaattcggct cgagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaan 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtct tcggagaaat 300

cacgaccaag gccaagttga 320

<210> 2069
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2069

nngngcatgc acgcgtacgt nagctcggaa ttcggctcga gcaagcccca ctcaaccacc 60

acacctctcc tcgttcacgc tacccctttc tgctcttctt ctacctttca agttttaaaa 120

gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag ggacaccctg 180

acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag caggacccag 240

acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc ttcggagaaa 300

tcacgaccaa ggccaagt 318

<210> 2070

<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2070

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg gttttcggag 300

ag 302

<210> 2071
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2071

gnanatgcac gcgtacgtaa nctcggaatt cggctcgagt tgggagttag gttctgcacg 60

ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct taatttgcac acgctgcttc 120

ttcagcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg taaacgaggg 180

tcaccccgac aagctgtgcg accagatctc tgatgcagtg ctcgatgcgt gccttgaaca 240

ggaccctgac agcaaggttg cctgtgagac atgcaccaag accaacatgg tcatggtc 298

<210> 2072
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2072

cgcangcacg cgtacgtaag ctcggaattc ggctcgaggc agacttaaca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctcctttccc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 300

agagatcacn 310

<210> 2073
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2073

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggggttactg tctgttcaag 60

ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat gggcccaaga 120

aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc tctgtgacca 180

gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca aggttgcctg 240

tgaaacctgc accaagacca acatggtgat ggttttcgga gagatcaca 289

<210> 2074
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2074

tcgcangnan gcgtacgtaa gctcggaatt cggctcgagn cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 300

agagatcac 309

<210> 2075
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2075

gtcncngcac gcgtacgtaa gctcggaatt cggctcgagc agacttaaca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca 120

gaagttaaaa tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac 180

cctgacaagc tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac 240

cctgacagca aggttgcctg tgaaacctgc accaagacca acatggtgat ggttttcgga 300

gagatcac 308

<210> 2076
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2076

gtcgcatgca cgcgtacgtn agctcggant tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accntctctc tctctctttc ttngtgcctc cttgccagaa 120

gttaaaatgg cccaaganac tttcctattc acntctgant cngtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca 310

<210> 2077
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2077

cnnatgcacg cgtacgtaag ctcggctcga gccgaatcgg ctcgaggttg agaccaagac 60

acactcgttc atatatctct ctgctcttct cttactcttc tacctctcaa gtttttgaag 120

tataaagatg gcagagacat tcctattcac ctcggagtca gtgaacgagg gacaccctga 180

taagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgaac aggacccaga 240

cagcaaggtt gcctgcgaaa catgcaccaa gaccaacttg gtcatggtct tcggagagat 300

caccaccaag 310

<210> 2078
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2078

cagtcgcang cacgcgtacg taagctcgtg aattcggctc gagcagactt aacaacagca 60

caaagcgggt nactgtctgt tcaagctacc atntctctnt ctctttctta gtggctcctt 120

gccanaagtt aaaatggccc aagaaacttt cctatncaca tctgaatcag tnaacgangg 180

gcaccctgac aagctctgtg accagatctc cgatgctgtg ctcgatgcat gctgggagca 240

ggaccctgnc agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt 300

cggagagatc acaaccaagg nnagc 325

<210> 2079
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2079

ctcgagccgc tcgagccgat tcggctcgag ctcccgagct catnccсttg agccatgtca 60

ctgccacgac gctcggtgcc aagctcaccg aggttaggna gaacgggaca tgcccttggc 120

tgagacctga tggcaagacc caagtcactg ttgagtacta caatgacaag ggtgccatgg 180

ttccaatccg cgtccacact gtgctcatct ccacacagca tgatganctg tcacaaatga 240

tgagattgc 249

<210> 2080
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2080

annnncgtgt acgtnagctn ngacatcggn attcggctcg agncagactt nacaacagca 60

caaagcgggt tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt 120

gccagangtt naaatgggcn caagaaactt tcctattcac atctgnatca gtgaacgagg 180

ggcaccctga caagctctgt gaccagatct ccgatgctgt gctcgatgca tgcttggagc 240

aggaccctga cagcaaggtt gcctgtgaaa cctggcacca agaccaacat ggtgatggtt 300

ttcggagaga tcacaaccaa ggcca 325

<210> 2081
<211> 316
<212> nucleic acid

<213>	Glycine max

<400>	2081

nnangcacgc gtacgtaagc tcggaattcg gctcgagcag acttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaacca aggcca 316

<210>	2082
<211>	303
<212>	nucleic acid
<213>	Glycine max

<400>	2082

ncgtcgcatg cacgcgtacg taagctcggg atttcggctc gaggggttac tgtctgttca 60

agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa atggcccaag 120

aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag ctctgtgacc 180

agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtgaaacctg cnaccaagac caacatggtg atggttttcg gagagatcac aaccaangcc 300

aac 303

<210>	2083
<211>	333
<212>	nucleic acid
<213>	Glycine max

<400>	2083

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag aagccccact caaccaccac 60

acctctcctc gttcacgcta ccccttctg ctcttcttct acctttcaag ttttaaaagt 120

ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg acaccctgac 180

aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca ggacccagac 240

agcaaagttg cctgcgaaac atgcaccaaa accaattggt catggtcttc ggagaaatca 300

cgaccaaggc caagttgact acgagaagat atg 333

<210> 2084
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2084

gcacgcgtac gtaagctcgg aattcggctc gaggtgcctt ctctgggaag gatcctacca 60

aggttgatag gagtggtgcc tacattgtga ggcaagctgc aaagagcatt gttgcaaatg 120

gacttgctag gagggcaatt gtgcaagttt cctatgccat tggtgtgcct gagccctgtc 180

tgtgtttgtt gacacttatg gcactgggaa gatcccgaca aggaaatcct cagcatgtga 240

aggagagttt tgactcagcc ggcagatctc catcaacctg atctcaa 287

<210> 2085
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2085

cgtacgtaag ctcggaattc ggctcgagca gcacaaagcg ggttactgtc tgttcaagct 60

accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg cccaagaaac 120

tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct gtgaccagat 180

ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg ttgcctgtga 240

aacctgcacc aagaccaaca tggtgatggt tttcggagag a 281

<210> 2086
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2086

gcacgcgtac gtaagctcgg gaattcggct cgaggcagac ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcg 294

<210> 2087
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2087

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcg 294

<210> 2088
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2088

nngtcgcang cacgcgtacg taagctcgga attcggctcg agacagcaca aagcgggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag 240

caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 290

<210> 2089
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2089

agtcgcangc angcgtacgt nagctcggaa ttcggctcga ggcagactta acaacagcac 60

aaagcgggtt actgtctgtt caagctacca tctctcnctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gnacgagggg 180

caccctgaca agctctgtga ccagatctcc gatgctgtgc tcgatgcatg ctcggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc tgcaccaagn ccaacntggt gatggttttc 300

ggagannnca anccaagggc an 322

<210> 2090
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2090

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagn ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg 300

gagaaatcac gaccaagg 318

<210> 2091
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2091

tcgcangcac gcgtacgtna gctcggaatt cggctcgagc ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag ggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttcggagaga 300

t 301

<210> 2092
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2092

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag ccaagcccca ctcaaccacc 60

acacnactct ctctgctctt cttctacctt tcaagttttt aaagtattaa gatggcagag 120

acattcctat ttacctcaga gtcagtgaac gagggacacc ctgacaagct ctgcgaccaa 180

atctccgatg ctgtcctcga cgcttgcctt gaacaggacc cagacagcaa ggttgcctgc 240

gaaacatgca ccaagaccaa cttggtcatg gtcttcggag agatcacca 289

<210> 2093
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2093

gtcgcatgca cgcgtacgta agctcggaat tcngctcgag gccccactca accaccacac 60

ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt ttaaaagtat 120

aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac accctgacaa 180

gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag 240

caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg gagaaatcac 300

gaccaaggc 309

<210> 2094
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 2094

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg ggccaggcaa gccccactca 60

accaccacac ctncgcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccanaa ccaacttggt catggtcttc 300

ggagaaatca cgaccaaggc caagttgact acgaga 336

<210> 2095
<211> 202
<212> nucleic acid
<213> Glycine max

<400> 2095

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggagaga tc 202

<210> 2096
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2096

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctcgagccgg aacttaacaa 60

cagcacaaag cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc 120

tccttgccag aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac 180

gaggggcacc ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg 240

gagcaggacc ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa catggtgatg 300

gttttcggag agatc 315

<210> 2097
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2097

cnaagagtcg catgcacgcg tacgtaagct cggaattcng ctcganggca agccccactc 60

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccanna ccaacttggt catggtcttc 300

ggagaaatca cgaccaaggc ca 322

<210> 2098
<211> 307
<212> nucleic acid

<213> Glycine max

<400> 2098

nnnttcnngc actcgtacgn aagctcggaa ttcggctcga ggaccaagcc ccactcaacc 60

accacaccac tctntctggc tcttcttcta cctttcaagt tnttaaagta ttaagatggc 120

ngagacagcc ctatttaccn cagagtcagt gaacgangga caccctgaca agctctgcga 180

ccaaatctcc gatgctgtcc tcgacgcttg ccttgaacag gacccagaca gcaaggttgc 240

ctgcgaaaca tgcaccaaga ccaacttggt catggtctnc ggagagatca ccaccaaggc 300

caacgtt 307

<210> 2099
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2099

tatgcntnca cgcgtacgta agctcgagaa ttcggctcga gaggccaggc aagccccact 60

caaccaccac acctctnctc gttcacgcta cccсttaatg ctcttctnct acctttnaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagcn 240

cgacccagac agcaaagttg cctgcgaaac atgcaccaan accaacttgg tcatggtctt 300

cggagaaatc acgaccaagg cca 323

<210> 2100
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2100

gcnngcacgc gtacgtaagc tcggaattcg gctcgaggtt aggttctgca cgctctgctt 60

ccagcgagtg ttctttcttc gtttcaacac cttaatttgc acacgctgct tcttcagctt 120

gagaaatggc acaagaaacc tttctattca catctgaatc tgtaaacgag ggtcaccccg 180

acaagctgtg cgaccagatc tctgatgcag tgctcgatgc gtgccttgaa caggaccctg 240

acagcaaggt tgcctgtgag acatgcacca agaccaacat ggtcatggt 289

<210> 2101
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2101

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ccaagcccca ctcaaccacc 60

acacnactct ctctgctctt cttctacctt tcaagttttt aaagtattaa gatggcagag 120

acattcctat ttacctcaga gtcagtgaac gagggacacc ctgacaagct ctgcgaccaa 180

atctccgatg ctgtcctcga cgcttgcctt gaacaggacc cagacagcaa ggttgcctgc 240

gaaacatgca ccaagaccaa cttggtcatg gtcttcggag agatcaccac 290

<210> 2102
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2102

ggtngtaagg tcggaattcg gctcgagnac cgatgaaacc cccgagtaca tgcccctcag 60

ccatgtcctt gcaaccaaac ttggtgctcg cntcacagag gttaggaaga atggnacctg 120

tgcttggttg aggccagatg gtaagaccaa gtaaccgtng agtactacaa tgacaatggt 180

gccatggttc cagttcgtgt ccacactgtn ctaatttcca cacaacanaa aannсttana 240

aannaatgat catattgctg cggacttaaa gagcagttat tnaagcctgt gnatctgaga 300

a 301

<210> 2103
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2103

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agcaagcccc actcaaccac 60

cacaccactc tctctgctct tcttctacct ttcaagtttt taaagtatta agntggcaga 120

gacattccta tttacctcag agtcagtgaa cgagggacac cctgacaagc tctgcgacaa 180

atctccgatg ctgtcctcga cgcttgcctt gaacangacc cagacagcaa ggttgcctgc 240

gaaacatgca ccaagaccaa cttggtcatg gtcttcggag agatcaccac caaggccaag 300

ttgactagag a 311

<210> 2104
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2104

gnacangcac gcgtacgtaa gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

cctgacaagc tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac 240

cctgacagca aggttgcctg tgaaacctgc accaagacca acatggtgat ggttttcgga 300

gagatcacaa cca 313

<210> 2105
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2105

ttncngcacg cgtacgtaag ctcggaattc ggctcgagnt aacaacagca caaagcgggt 60

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 240

agcaaggttg cctgtgaaac ctggcaccaa gaccaacatg gtgatggttt tcggagagat 300

cacaac 306

<210> 2106
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2106

agttcanaca gcgtacgana gctcggaant cggctcgagg gccaggcnag cccnatcaac 60

cancacacnt ctcctacnct cacgctacnc cttgctgcnc ttcncgcgac nttngcaagt 120

nctnaaaagt ataaagatgg cagagacatn cctantnacc ncagagtcgg tgaacgaggg 180

anaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaaa accaacttgg tcatggtctt 300

cggagaaatc acgaccaagg ccaac 325

<210> 2107
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2107

aanngangca cgcgtacgta agctcggaat tcggctcgag caacagcaca aagcnggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag 240

caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg gaga 294

<210> 2108
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2108

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ctcgagccgc aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 300

agan 304

<210> 2109
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2109

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctacnatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttcgg 300

aga 303

<210> 2110
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2110

ngtngcatgc acgcgtacgt aagctcggaa ttcggctcga gcgagccatt tgggagttag 60

gttctgcacg ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct taatttgcac 120

acgctgcttc ttcagcttga gaantggcac aagaaacctt tctattcaca tctgaatctg 180

taaacgaggg tcaccccgac aagctgtgcg accagatctc tgatgcagtg ctcgatgcgt 240

gccttgaaca ggaccctgac agcaaggttg cctgtgagac atgcaccaag accaacatgg 300

tca 303

<210> 2111
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2111

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agatttggga gttaggttct 60

gcacgctctg cttccagcga gtgttctttc ttcgtttcaa caccttaatt tgcatacgct 120

gcttcttcng cttgagaaat ggcacaagaa acctttctat tcacatctga atctgtaaac 180

gagggtcacc ccgacaagct gtgcgaccag atctctgatg cagtgctcga tgcgtgcctt 240

gaacaggacc ctgacagcaa ggttgcctgt gagacatgca ccaagaccaa catggtca 298

<210> 2112

<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2112

nncgcangca cgcgtacgta agctcggaat tcggctcgag agccccactc aaccaccaca 60

ccactctctc tgctcttctt ctacctttca agtttttaaa gtattaagat ggcagagaca 120

ttcctattta cctcagagtc agtgaacgag ggacaccctg acaagctctg cgaccaaatc 180

tccgatgctg tnntcgacgc ttgccttgaa caggacccag acagcaaggt tgcctgcgaa 240

acatgcacca agaccaactt ggtcatggtc ttcggagaga tcacca 286

<210> 2113
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2113

cacgtcgcan gcacgcgtac gtaagctcgg aattcggctc gagtgacaag gagattctgc 60

aaattgtgaa ggagaatttc gacttcagac ctggaatgat caccattaac ttggacctta 120

agaggggtgg tcataggttc ctcaagacag ctgcttatgg acactttgga agggatgatg 180

cagacttcac ctgggaagtt gtgaagccac tcaagtcaga gaagcctcaa gcttaagagt 240

gttgttaagt taatcactcc cttcagtgga tgtcttgctg ggtgtggatg aataatttgc 300

gtgtttcatg actact 316

<210> 2114
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2114

tgcangcacg cgtacgtaag ctcggaattc ggctcgagnt atcaagcctg tcattcctga 60

gaagtacctt gatgacatgc tctttaaggt ccgcagcaat ttgatcattg ctcacagtct 120

ncatcatgtt gggtggacct taaagagcan nttntcaagc ctgtcattcc tgagaagtac 180

cttgatgaga agaccatctt ccaccttaac ccttctggcc gttttgtcat tggtggccct 240

catggtgang ctgcnctcac tggaagaaag atcatcattg atacctatgg tggctggggt 300

gctcatgg 308

<210> 2115
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2115

ctngcnctng tacgtnagct cggaattcgg ctcgaggnac caagccccac tcaaccacca 60

cacnactctc tctgctcttc ttctaccttt caagttttta aagtattaag atggcagaga 120

cattcctatt tacctcagag tcagtgaacg agggacaccc tgacaagctc tgcgaccaaa 180

tctccgatgc tgtcctcgac gcttgccttg aacaggaccc agacagcaag gttgcctgcg 240

aaacatgcac caagaccaac ttggtcatgg tcttcggaga gatc 284

<210> 2116
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2116

cgcangcacg cgtacgtaag ctcggaattc ggctcgagcc aagccccact caaccaccac 60

accactctct ctgctcttct tctacctttc aagtttttaa agtattaaga tggcagagac 120

attcctattt acctcagagt cagtgaacga gggacaccct gacaagctct gcgaccaaat 180

ctccgatgct gtcctcgacg cttgccttga acaggaccca gacagcaagg ttgcctgcga 240

aacatgcacc aagaccaact tggtcatggt cttcggagag atc 283

<210> 2117
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2117

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggacttaaca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca 120

gaancgcaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagacc aacatggtga tggttttc 298

<210> 2118
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2118

annnaancaa gcgtacgtaa gctcggaatt cggctcgagg ttaggttctg cacgctctgc 60

ttccagcgag tgttctttct tcgtttcaac accttaattt gcacacgctg cttcttcagc 120

ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg agggtcaccc 180

cgacaagctg tgcgaccaga tctctgatgc agtgctcgat gcgtgccttg aacaggaccc 240

tgacagcaag gttgcctgtg agacatgcac caagaccaac atggtcat 288

<210> 2119
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 2119

tgcangcacg cgtacgtaag ctcggaattc nnctcgaggc annacnccan tncaaccacc 60

acacctctcn tcgttcangc tannnaaatn ctgctgttct tctacctgtc aagttttgaa 120

agtatanaga tggcaganac attcctattt acctcanagt cggtgaacga gggacaccct 180

gacaagctct gcgaccaaat ctccgntgct gtcctcgacg cttgcntcga gcagnaccca 240

gacagcaaag ttgccngcga nacatggacc aaaaccaact tggtcatggt nttcggagaa 300

atcacgacca aggccaacgt tgactacnn 329

<210> 2120
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2120

ggccaggcaa gccccactca accaccacac ctctcctcgt tcacgctacc cctttctgct 60

cttcttctac ctttcaagtt ttaaaagtat aaagatggca gagacattcc tatttncctc 120

agagtcggtg aacgagggac accctgacaa gctctgcgac caaatctccg atgctgtcct 180

cgacgcttgc ctcgagcagg acccagacag caaagttgcc tgcgaaacat gcaccaaaac 240

caacttggtc atggtcttcg gagaaatcac gaccaag 277

<210> 2121
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2121

cgcangcacg cgtacgtaag ctcggaattc ggctcgagca agccccactc aaccaccaca 60

cgcgtcnctc tngcgcttct tctacctttc aagtttttaa agtattaaga tggcaganac 120

attcctattt acctcagagt cagtgaacga gggacaccct gacaagctct gcgaccaaat 180

ctccgatgct gtcctcgacg cttgccttga acaggaccca gacagcaagg ttgcctgcga 240

aacatgcacc aagaccaact tggtcatggt cttcggagag atcacc 286

<210> 2122
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 2122

annctgaanc gtangnaagc ntacgnattc ngctcgagng gcaggcaagc cccactcaan 60

caccacacct gctcctgcgt ncangctnac ccgtnnngan gnnatgacta cctntcaagt 120

tntaaaagta tngnanatgg cngagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgntgctgtc ctcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccacc accaagttgg tcatggtctt 300

cggagaaatc acgaccaagg cnaacgttac tacgagann 339

<210> 2123
<211> 480
<212> nucleic acid
<213> Glycine max

<400> 2123

anctcttacc ggctntntng cccaaaatng tanangcttc ccggctcgac ncacgcgtcn 60

gtacggctgc gagaagacga cagaaggggg cagctcttga tttnaggnca ngcaanccccc 120

actcaancac cacacctctc ctcgttcacg ctatcccttt ctgctcttct tctacctttc 180

angttttaan agtacncaca tggcaagaca cattcctatt tanctnagac tcggtgaann 240

acggacaccc tgacaagctc tgcgaccaaa tctccgatnc tgtcctcgac gcttgcctcg 300

ancaggactc agacancana nttgcctgcn aaacatgcac caaaaccaac ttggtcatgg 360

tcttcngaga antcacgacc aaggccaacn ttgactacga aaagannqtg cgttacacct 420

gccgggaaca tcggcttctt tcnaaatgat gttgggactg gatgccgacc actgcatngg 480

<210> 2124
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2124

anntcgcang cacgcgtacg tnagctcgga attcggctcg agccttaaca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctctac tttcttagtg cctccttgcc 120

agangttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

nncctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttcg 300

gagagat 307

<210> 2125
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2125

tcgnngacgc gtacgtaagc tcggaattcg gctcgaggac ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctcncntttc ctnagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgaaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggagag 300

atcacaa 307

<210> 2126

<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2126

ttcgcatgca cgcgtacgta agctcggaat tcggctcgag caacagcaca aagcgggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtnac cagatctccg atgctgtgct cgatgcatgc ttggagcagg accctgacag 240

caaggttgcc tgtgnaaacc tggcaccaag accaacatgg tgatggtttt cggagagatc 300

acaaccaag 309

<210> 2127
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2127

aaaanntnaa nagcgtacgt aagctcggaa ttcggctcga gnagacacac tcgttcatat 60

atctctctgc tcttctcttc tcttctacct ctcaagtttt tgaagtataa agatggnaga 120

gacattccta ttcacctcgg agtcagtgaa cgagggacac cctgataagc tctgcgacca 180

aatctccgat gctgtcctcg acgcttgcct cgaacaggac ccaganagca aggttgcctg 240

cgaaacatgc accaagacca attggtcatg gtcttcggag agatcaccac caaggccaac 300

gt 302

<210> 2128
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2128

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag cacanagcgg gttactgtct 60

gttcaagcta ccatctctac tctctctttc ttagtgcctc cttgccagaa gttanaatgg 120

cccaagaaac tttcctattc acgtctgaat cagtgaacga ggggcaccct gacaagctct 180

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 240

ttgcctgtga aacctgcacc aagaccaaca tggtgatggt tttcggag 288

<210> 2129
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2129

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cacactcgtt catatatctc 60

tctgctcttc tcttctcttc tacctctcaa gtttttgaag tataaagatg gcagagacat 120

tcctattcac ctcggagtca gtgaacgagg gacaccctga taagctctgc gaccaaatct 180

ccgatgctgt cctcgacgct tgcctcgaac aggacccaga cagcaaggtt gcctgcgaaa 240

catgcaccaa gaccaacttg gtcatggtct tcggagaga 279

<210> 2130
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2130

cgtcgcntgc acgcgtacgt aagctcggga attcggctcg agcgagccat ttgggagtta 60

ggttctgcac gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca 120

cacgctgctt cttcagcttg agaaatggca caagaaacct ttctattcac atctgaatct 180

gtaaacgagg gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg 240

tgccttgaac aggaccctga cagcaaggtt gcctgtgaga catgcaccaa gaccaacatg 300

g 301

<210> 2131
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2131

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

acccctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttn 299

<210> 2132
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2132

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggttttc 299

<210> 2133
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2133

gtcgnacaca aagcgtagtn aagctcggaa ttcggctcga gcggagattc ttcaaattgt 60

gaaggagaat ttcgacttca gacctggaat gatcaccatt aacttggacc ttaagagggg 120

tggccatagg ttcctcaaga cagctgctta tggacacttt ggaagggatg accctgactt 180

cacctgggaa gttgtgaagc cactcaagtc tgagaagcct caagcttaag attgttgtga 240

agttaatcac tcccttcaat ggatgtcttg ctaggtgtgg atgaataatt tgcgtgttcc 300

atgactacta ctacttcatc 320

<210> 2134
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2134

nnaatnntaa ngcacgcnta cgtaagctcg gaattcggct cgaggggagc cccactcaac 60

caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaatntgc accaaaacca acttggtcat ggtcttcgga 300

gaaatcacga cca 313

<210> 2135
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2135

angnatcgca ngcncgcgta cgtnagctcg gaattcggct cgagggccag gcaagcccca 60

ctcaaccacc acacctctcc tcgttcncgc taccccttc tgctcttctt ctacctttca 120

ngttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag 180

ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag 240

caggacccag acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc 300

ttcggagaaa tcacga 316

<210> 2136
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2136

agtcgcangc acgcgtacgt aagctcggaa ttcngctcga ggcaagcccc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctngctcttc ttctaccttt ccaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa cttggtcatg gtcttcggag 300

aaatcacga 309

<210> 2137
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2137

cgcangcacg cgtacgtaag ctcggaattc ggctcgagca caaagcgggt tactgtctgt 60

tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt aaaatggccc 120

aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcacccngac aagctctgtg 180

accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac agcaaggttg 240

cctgtgaaac ctgcaccaag accaacatgg tgatggtttt 280

<210> 2138
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2138

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aggttctgca cgctctgctt ccagcgagtg ttctttcttc gtttcaacac cttaatttgc 120

acacgctgct tcttcagctt gagaaatggc acaagaaacc tttctattca catctgaatc 180

tgtaaacgag ggtcaccccg acaagctgtg cgaccagatc tctgatgcag tgctcgatgc 240

gtgccttgaa caggaccctg acagcaaggt tgcctgtgag acatgcacca agaccaacat 300

ggt 303

<210> 2139
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2139

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cgctctgctt ccagcgagtg ttctttcttc gtttcaacac cttaatttgc acacgctgct 120

tcttcagctt gagaaatggc acaagaaacc tttctattca catctgaatc tgtaaacgag 180

ggtcaccccg acaagctgtg cgaccagatc tctgatgcag tgctcgatgc gtgccttgaa 240

caggaccctg acagcaaggt tgcctgtgag acatgcacca agaccaacat ggt 293

<210> 2140
<211> 325
<212> nucleic acid

<213>   Glycine max

<400>   2140

antcncngca cgcgtacgta agctcggaat tcggctcgag tgatttgagg ccaggcaagc   60

cccactcaac caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct   120

ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa   180

cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct   240

cgagcaggac ccagacagca aagtngcctg cgaaanatgc accagaacca acttggtcat   300

ggtcttcgga gaaatcacga ccaag   325

<210>   2141
<211>   298
<212>   nucleic acid
<213>   Glycine max

<400>   2141

ntcgcangca cgcgtacgta agctcggaat tcggctcgag ctgacaagga gattcttcaa   60

attgtgaagg agaattncga cttcanacct ggaatgatca ccattaactt ggaccttaag   120

aggggtggcc ataggttcct caagacagct gcttatggac actttggaag ggatgaccct   180

gacttcacct gggaagttgt gaagccactc aagtctgaga agcctcaagc ttaagattgt   240

tgtgaagtta atcactccct tcaatggatg tcttgctagg tgtggatgaa taatttgc   298

<210>   2142
<211>   301
<212>   nucleic acid
<213>   Glycine max

<400>   2142

cgctnnacgt cgcangcacg cgtacgtaan ctcggaattc ggctcgagnt tgggagttag   60

gttctgcacg ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct taatttgcac   120

acgctgcttc ttcagcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg   180

taaacgaggg tcaccccgac aagctgtgcg accagatctc tgatgcagtg ctcgatgcgt   240

gccttgaaca ggaccctgac agcaaggttg cctgtgagac atgcaccaag accaacatgg   300

t   301

<210> 2143
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2143

gcgtacgtaa gctcggaatt cggctcgagc aacagcacaa agcgggttac tgtctgttca 60

agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa atggcccaag 120

aaactttcct attcacatct gaatnagtga acgaggggca ccctgacaag ctctgtgacc 180

agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtgaaacctg caccaagacc aacatggtga tggttttcgg aga 283

<210> 2144
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2144

ncgtcgcatg cacgcgtacg taagctcgga attcggctcg agcaacagca caaagcgggt 60

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 240

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cgg 293

<210> 2145
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2145

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 240

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggtttt cgga 294

<210> 2146
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2146

gtcgcangca cgcgtacgta agctcggaat tcggctcgag acttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc 240

tgacagcaag gttgcctgtg aaacctgcac caagaccaac atggtgatgg t 291

<210> 2147
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 2147

acgcgtacgt aagctcggaa ttcggctcga gggccaggca agccccactc aaccaccaca 60

cntctcctgc gttcangcta cccctttctn gctcttcttc tacctntcaa gtnttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctgn 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctggcgaa acatgcacca ntnnnacttg gtcatggtct tcggagaaat 300

cacgaccaag gccaacgttg actacgagaa gatagtgcgt 340

<210> 2148
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 2148

agnanctgca cgcgtacgta agctcggaat tcggctcgag atttgaggnc aggcaagccc 60

cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt 120

caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 240

agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaaccaac ttggtcatgg 300

tcttcggaga aatcacgac 319

<210> 2149
<211> 198
<212> nucleic acid
<213> Glycine max

<400> 2149

tagtgcctcc ttgccagaag ttaaaatggc ccaaganact ttcctattca natctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatggtt ttcggaga 198

<210> 2150
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2150

ngtcncangc acgcgtacgt nagctcggaa ttcggctcga ggcacaaagn gggttactgt 60

ctgttcaagc taccatctct ctctctgctt tgcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcn ngccatgctt ggagcaggac cctgacagca 240

aggttgcntg tgaaacctgc accaagacca acatggtgat ggttttcgga gag 293

<210> 2151
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2151

agttgcatgc actcgtacgt aagctcggaa ttcggctcga ggtcttcgga gaaatcacga 60

ccaaggccaa cgttgactac gagaagatag tgcgtgacac ctgcaggaac atgcggcttc 120

cgtctcaaat gatgtgggac tggatgccga caactgcaag gtcctcgtca acattgagca 180

gcagagccnt gatattgcct cagggtgtac acggnccacc ttacnnnnaa acctgaagaa 240

nttggtgctg gtgaccaggg tccacatgtt tggctatgcc atgatgaaac cccnc 295

<210> 2152
<211> 219
<212> nucleic acid
<213> Glycine max

<400> 2152

tagtgcctcc tcgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagtctgt gaccagatct ccgatgctgt gctcgatgca 120

tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa cctggcacca agaccaacat 180

ggtgatggtt ttcggagaga tcacaancaa ggccaacgt 219

<210> 2153
<211> 218
<212> nucleic acid
<213> Glycine max

<400> 2153

tantgcctcc ttgtcagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccatc gacaagctct gtgaccagat ctccgatgct gtgctcgatg 120

catgcttgga gcaggaccct gacagcaagg ttgcctgtga aacctgcacc aagnaccaac 180

atggtgatgg ttttcggaga gatcacaacc aaggccaa 218

<210> 2154
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2154

cangcgtacg taagctcgga attcggctcg agacagcaca aagcgggtta ctgtctgtnc 60

aagcnaccat ctcnctctct ctttcttagt gcctccttgc cagaagttaa aatggcccaa 120

gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa gctctgtgac 180

cagatctccg atggctgtnc tcgatgcatg cttggagcag gaccctgaca gcnaggttgc 240

ctgtgaaacc tgcaccaaga ccaacatggt gatggttttc ggagagatca n 291

<210> 2155

<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2155

tncngtnnnn ngcacgcgta cgtaagctcg gaattcggct cgagnactta anaanagcac 60

aaagcgggtt actgtctgtt caagctanca tctctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatgggccc aagaaacttt cctattcaca tntgaatcag tgaacgaggg 180

gcaccctgac aagctctgtg accagatctc cgatgctgtg cttcgatgca tgcttggagc 240

aggaccctga cagcaaggtt gcctgtgaaa cctgcaccaa gaccaacatg gtgatggttt 300

tcggagaga 309

<210> 2156
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2156

nantcgcatn cacgcgtacg taagctcgag aatggccacn cacgccccac tcaaccacta 60

nacntntcct cnttcacgct accccttct gctctncttn tacntttcaa gttttaaaan 120

nataaagatg gcagagacat tcctatttan ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgana catgccacca aaaccaactt ggtcatggtc ttcggagaaa 300

tcacgaccaa ggc 313

<210> 2157
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2157

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggttcatata tctctctgct 60

cttctcttct cttctacctc ncaagttttt gaagtataaa gatggcagag acattnccta 120

ttcacctcgg agtcagtgaa cgagggacac cctgataagc tctgcgacca aatctccgat 180

gctgtcctcg acgcttgcct cgaacaggac ccagacagca aggttgcctg cgaaacatgc 240

accaagacca acttggttca tggtcttcgg agagatcacc accaaggcca acgt 294

<210> 2158
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2158

cncgcacgcg tacgtaagct cggaattcgg ctcgagaaag cgggttactg tctgttcaag 60

ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat ggcccaagaa 120

actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagct ctgtgaccag 180

atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa ggttgcctgt 240

gaaacctggc accaagacca acatggtgat ggttttcgga gagat 285

<210> 2159
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2159

gcacgngtac gtnagctcgg aattcggctc gaggccattt gggagttagg ttctgcacgc 60

tctgcttcca gcgagtgttc tttcttcgtt tcaacacctt aatttgcaca cgctgcttct 120

tcagcttgag aaatggcaca agaaaccttt ctattcacat ctgaatctgt aaacgagggt 180

caccccgaca agctgtgcga ccagatctct gatgcagtgc tcgatgcgtg ccttgaacag 240

gaccctgaca gcaaggttgn ctgtgagact gcaccaagac caacatggtc atggtctttg 300

<210> 2160
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2160

gtcgcangca cgcgtacgta agctcggaat tcggctcgnn ctcgagccga atcggctcga 60

gccaaccgat gaaacccccg agtaactgcc cctcagccat nctccttgca accaaacttg 120

gngctcgcnt cacagaggtt aggaagaatg gcacctgtgc ttggttgagg ccagatggta 180

agacacaagt aaccgtcgag tactacaatg acaatggtgc catggttcca gttcgtgtcc 240

acactgtcct aatttcca 258

<210> 2161
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 2161

gtcgcangcn cgcgtacgtn nagctcggaa ttcggctcga gcttgatttg aggccaggca 60

agccccactc aacnaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta 120

ccttcaagtt ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg 180

aacgagggac accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc 240

ctcgagcagg acccagacag caaagttgcc tgcgaaacat gcaccaaaac caattggtca 300

tggtcttcgg agaaatcacg accaaggcca acgtt 335

<210> 2162
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2162

cgcaggaccc cccacncnag ctcggaattc ggctcgagcc aagncccact caaccaccac 60

accactctct ctgctcttct tctacctttc aagtnggtaa agtattaaga tggcagagac 120

attcctattt acctcagagt cagtgaacga gggacaccct gacaagctct gcgaccaaat 180

ctccgatgct gtcctcgacg cttgccttga acaggaccca gacagcaagg ttgcctgcga 240

aacatgcacc aagaccaact tggtcatggt cttggagaga tcaccac 287

<210> 2163
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 2163

cngtangacg tcgcatgcac gcgtacgtaa gctcggaaat tcggctcgag ngacntaaca 60

acagcacaaa gcgggttact gtctgttcaa gntanccatc tntgctctct ctttcttagt 120

gcctccttgc nagaagntan aatggcccaa gnaaactttc ctattcacat ctgaatcagt 180

gancgagggg caccctgaca agctctgtga ncagatctcc gatgctgtgc tcgatgcatg 240

cttggagcag gaccctnaca gcaaggttgc ctgtgaaacc tgcaccaaga ccaanatggt 300

gatngttttc ggagagatc 319

<210> 2164
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2164

nagnntntgc acgcgtacgt aagctcggaa ttcggctcna gcacaaagcg ggttactggc 60

tgtncaagct accattctct ctctctcttt cttagtgcct ccttgccata agttaaaatg 120

gcccnagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc tgacaagctc 180

tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc tnacagcaag 240

gttgcctgtg aaacctgcac caagaccaac atggtgatgg tttcggagag atcacgacca 300

aggncaantg ggtntgagaa gatngtg 327

<210> 2165
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2165

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg 300

gagaaatca 309

<210> 2166
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2166

aagccccact caaccaccac acctctcntc gttcacgcta cccctttctg ctcttcttct 60

acctttcaag ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg 120

tgaacgaggg acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt 180

gcctcgagca ggacccagac agcaaagttg cctgcgaaac atgcaccaaa accaacttgg 240

tcatggtctt cggagaaatc 260

<210> 2167
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2167

aggcaagccc cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc 60

ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag 120

tcggtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac 180

gcttgcctcg agcaggaccc agacagcaaa gttggctgcg aaacatgcac caaaaccaac 240

ttggtcatgg tcttcggaga aatcac 266

<210> 2168
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2168

agncgntgca cgcgtacgta agctcggaat tcngctcgag gccaggcaag ccccactcaa 60

ccaccacacc ttctccttcg ttcacgctac ccctttctgc ttcttcttct acctttcaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccana accaacttgg tcatggtctt 300

cggagaaatc acg 313

<210> 2169
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2169

angcacgcgt acgtaagctc ggaattcggc tcgaggccat ttgggagtta ggttctgcac 60

gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca cacgctgctt 120

cttcngcttg agaaatggca caagaaacct ttctattcac atctgaatct gtaaacgagg 180

gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg tgccttgaac 240

aggaccctga cagcaaggtt gcctgtgaga catgcaccaa gaccaacatg 290

<210> 2170
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2170

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctcgagccga attcggctcg 60

nggagaaatc acgaccangg ccaaanttga ctacgagaag anngtgcgtg acacctgcag 120

gancatcggc ntcgtcncaa atgatgtggg actggangcc gacaactgca aggtcctcgt 180

caacatngag cagcanagcc ctganattgc tcagggngta cncggccacc ttaccaaaaa 240

acctgaagaa attggtgcng g 261

<210> 2171
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2171

gtgcattcgt acgtaagctc ggaattcngc tcgaggccag gcaagcccca ctcaaccacc 60

acacctctcc tcgttcacgc tacccctttc tgctcttctt ctacctttca agttttaaaa 120

gtataaagat ggcagagacn ttcctattta cctcagagtc ggtgaacgag ggacaccctg 180

acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag caggacccag 240

acagcaaagt tgcctgcgaa acatgcacca aaaccanctt ggtcatggtc ttcggagaaa 300

tcacg 305

<210> 2172
<211> 304
<212> nucleic acid

<213> Glycine max

<400> 2172

tcgcangcac gcgtacgtaa gctcggaatt ctnctcgagg caagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtct tcggagaaat 300

caga 304

<210> 2173
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2173

ngangcacgc gtacgtaagc tcggaattcn gctcgaggca agccccactc aaccaccaca 60

cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gcnaagttgc ctgcgaaaca tgcaccanaa ccaacttggt catggtcttc ggagaaatca 300

cganca 306

<210> 2174
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2174

nnncanangc acgcgtacgt aagctcggaa ttcggctcga gcggctcgag accactctct 60

ctgctcttct tctacctttc aagtttttaa agtattaaga tggcagagac attcctattt 120

accttcagag tcagtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 180

tgtcctcgac gcttgccttg ancaggaccc agacagcaag gttgcctgcg aaacatgcac 240

caagaccaac ttggtcatgg tcttcggaga gatcaccacc aag 283

<210> 2175
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2175

nngtcgcctg cacgcgtacg tnagctcgga attcggctcg aggttactgt ctgttcaagc 60

taccatctct ctctctcttn cttagtgcct ccttgnccag aagttaaaat ggcccaagaa 120

actttcctat tcacatctga atcagtgaac gangggcacc tgacaagctc tgtgaccaga 180

nctccgatgc tgtgctcgat gcatgcttgg agcaggacct gacagcaagg ttgcctgtga 240

aacctgcacc aagaccaaca tggtgatggt tttcggagag atcanaacca agggccacng 300

tgannaataa ganatgtgcn t 321

<210> 2176
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2176

aagcnccact caaccaccac accactctct ctgntctnct tctacctttc aagtttttaa 60

agtattaaga tggcanagac attcctattt acctcagagt cagtgaacga nggacacccct 120

gacaagctct gcgaccaaat ntccgatgct gtcctcgacg cttgccttga acaggaccca 180

gacagcaagg ttgctgcgga aacatgcacc agaccacttg gtcatggtct tngaganatc 240

accaccaagg ccacgttgac tacgaganga tcgtgcgtga cacctgcaga acatcggctt 300

cgtt 304

<210> 2177
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2177

cacgcgtacg taagctcgga attcggctcg aggcagactt ancaacagca caaagcgggt 60

tactgtcngt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggcnc aagaaacttt cntattcaca tctgaatcag ngaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgntgcat gcttggagca ggaccctgan 240

agcaaggttg cctgtgaaac ctggcaccan gaccaacatg gtgatggttt tcggaga 297

<210> 2178
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2178

gtacangcac gcgtacgtaa gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

ccctgacagc aaggttgcct gtgaaacctg caccaagcca acatggtgat ggttttcgga 300

gagatcacaa 310

<210> 2179
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2179

cgcgtacgtn agctcggaat tcggctcgag cttaacaaca gcacaaagcg ggttactgtc 60

tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg 120

cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctct 180

gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct gacagcaagg 240

ttgcctgtga aacctgcacc aagaccaaca tggtgatg 278

<210> 2180
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2180

cgcatgcacg cgtacgtaag ctcggaattc ggctcgagca acagcanaaa gcgggttact 60

gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaagacca acatggtgat g 281

<210> 2181
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2181

gnnnangcac gcgtacgtna gctcggaatt cggctcgagg gccaggcaag ccccactcaa 60

ccaccacacc tctcctcgnn cacgctgacc cctntctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgcngtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg 300

gagaa 305

<210> 2182
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2182

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cacaaagcgg gtcactgtct 60

gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag ttaaaatggc 120

ccaagaaact ttcctattca catctgaatc agtgaacgag ggcaccctg acaagctctg 180

tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg acagcaaggt 240

tgcctgtgaa acctgcacca agaccaacat ggtgatg 277

<210> 2183
<211> 187
<212> nucleic acid
<213> Glycine max

<400> 2183

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

ggtgatg 187

<210> 2184
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2184

tcgcangcac gcgtacgtaa gctcggaatt cngctcgagc aacagcacaa agcgggttac 60

tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa 120

atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag 180

ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc 240

aaggttgcct gtgaaacctg caccaagacc aacatggtga tg 282

<210> 2185
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2185

gtcgcangca cgcgtacgta agctcggnat tcggctcgan ctcgagccga attcgggctc 60

gantatacaa cagcacaaag cgggactact gtctgttcaa gactaccatc tctntctctc 120

tttcttagtg cctccttgcc agaagttaaa atggcccaan aaactttcct attcacatct 180

gaatcngtga acgaggggca ccctgacaag ctctgtgacc agatctccga tgctgtgctc 240

gatgcatgct tggagcagga ccctgacagc aaggttgcct gtgaaacctg caccaagacc 300

aacatggtga tggtt 315

<210> 2186
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2186

anacgcangc acgcgtacgt aagctcggaa ttcngctcga gggcaagccc cactcaacca 60

ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt caagttttaa 120

aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc 180

tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc 240

agacagcaaa gttgcctgcg aaacatgnac caaaaccaac ttggtcatgg tcttcggaga 300

aat 303

<210> 2187
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2187

acgtcgcang cacgcgtacg taagctcgga attcngctcg aggccccact caaccaccac 60

accnctcctc gttcacgcta cccctttctg ctcttcttct acctttcaag ttttaaaagt 120

ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg acaccctgac 180

aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca ggacccagac 240

agcaaagttg cctgcgaaac atgcaccaaa accaacttgg tcatggtctt cggagaa 297

<210> 2188
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2188

cgcntgcacg cgtacgtnag ctcggaattc ggctcgaggc acaaagcggg ttactgtctg 60

ttcaagctac catctctctc tctctttctt agtgcctcnt tgccagaagt taaaatggcc 120

caagaaactt tcctattcac atctgancca gtgaacgagg ggcaccctga caagctctgt 180

gaccagatct ccgatgctgt gctcgatgca tgcttggagc aggaccctga cagcaaggtt 240

gcctgtgaaa cctgcaccaa gaccaacatg gtgatg 276

<210> 2189
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2189

ngtcgcangc acgcgtacgt aagctcggga attcngctcg aggcaagccc cactcaacca 60

ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt caagttttaa 120

aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc 180

tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc 240

agacagcaaa gttgcctgcg aaacatgcac caaaaccaac ttggtcatgg tcttcggaga 300

<210> 2190
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2190

gcntangtac gcnnacgtaa gctcggaatt cggctcgagc caccacacct ctcctcgttc 60

acgctacccc tttcngctct tcttctacct ttcaagtttt aaaagtataa agatggcaga 120

gacattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc tctgcgacca 180

aatctccgat gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcctg 240

cgaaacatgc accaaaacca acttggtcat ggtcttcgga gaa 283

<210> 2191
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2191

tcgtcgcang cacgcgtacg taagctcgga attcggctcg agaggcaagc cccactcaac 60

caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga 300

gaa 303

<210> 2192
<211> 320
<212> nucleic acid
<213> Glycine max

<400>   2192

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caagccccac tcaaccacca cacctctcct cgttcacgct accccttcct ggctcttctt 120

ctacctttca agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc 180

ggtgaacgag ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc 240

ttgcctcgag caggacccag acagcaaagt tgcctgcgaa acatgcacca aaaccaactt 300

ggtcatggtc ttcggagaaa   320

<210>   2193
<211>   301
<212>   nucleic acid
<213>   Glycine max

<400>   2193

agttnngcac gcgtacgtaa gctcggaatt cggctcgaga ggcaagcccc actcaaccac   60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacaccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

gacagcaaag ttgcctgcga aacatgcacc aaaaccaact tggtcatggt cttcggagaa 300

a   301

<210>   2194
<211>   284
<212>   nucleic acid
<213>   Glycine max

<400>   2194

gcatgcacgc gtacgtaagc tcggaattcg gctcgagcca agccccactc aaccaccaca   60

ccactctctc tgctcttctt ctacctttca agtttttaaa gtattaagat ggcagagaca 120

ttcctattta cctcagagtc agtgaacgag ggacaccctg acaagctctg cgaccaaatc 180

tccgatgctg tcctcgacgc ttgccttgaa caggacccag acagcaaggt tgcctgcgaa 240

acatgcacca agaccaactt ggtcatggtc tcggagagat cacc   284

<210>   2195

<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2195

ncacgtcgca ngcacgcnta cgtaagctcg gaattcggct cgagcaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaaganact ttcctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatgg 288

<210> 2196
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2196

cgcnttacgc gtacgtaagc tcggaattcg gctcgaggcc atttgggagt taggttctgc 60

acgctctgct tccagcgagt gttctttctt cgtttcaaca ccttaatttg cacacgctgc 120

ttcttcngct tgagaaatgg cacaaaaacc tttctattca catctgaatc tgtaaacgan 180

ggtcaccccg acaagctgtg cgaccagatc tctgatgcag tgctcgatgc gtgccttgaa 240

caggaccctg acagcaangt tgcctgtgag acatgcacca ngaccaacat gg 292

<210> 2197
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2197

ctcngctcgc ntacgtnanc tcggaattcg gctcgagnna tttgaggcca ggcaagcncc 60

actcaaccac cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc 120

aagttttaaa agtataaaga tggcaganac attcctattt acctcagagt cggtgaacga 180

gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcntcga 240

gcaggaccca gacagcaaag ttgcctgcna nacatgcacc aaaaccaact tggtcatggt 300

cttcggagaa atcacg 316

<210> 2198
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2198

cgcatgcagc gtacgtnagc tcggaattcg gctcgaggng ccaggcaagc cccactcaac 60

caccacacct ctcctcgttc acgctacccc tttctgctct tcncnctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccaanacc aacttggtca tggtcttcgg 300

agaaa 305

<210> 2199
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2199

ngtcgcangc acgcgtacgt aanctcggaa ttcggctcga gtttgggagt taggttctgc 60

acgctctgct tccagcgagt gttctttctt cgtttcaaca ccttaatttg cacacgctgc 120

ttcttcagct tgagaaatgg cacaagaaac ctttctattc anatctgaat ctgtaaacga 180

gggtcacccc gacaagctgt gngaccagat ctctgatgca gtgcccgatg cgtgccttga 240

acaggncccct gacancaagg ttgcctgtga gacatgnacc aagaccaana tggtcatgtt 300

t 301

<210> 2200
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2200

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca ccaagaccna catggtgat 289

<210> 2201
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2201

gtcgcatgca cgcntacgta agctcggaat tnngctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctggc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccanaa ccaacttggt catggtcttc 300

ggagaaatc 309

<210> 2202
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2202

gcagacttaa caacagcaca aagcgggtta ctgtctgttc aagctaccat ctctctctct 60

nctttcttag tgcctccttg ccagaagtta aaatggccca agaaactttc ctattcacat 120

ctgaatcagt gaacgagggg caccctgaca agctctgtga ccagatctcc gatgctgtgc 180

tcgatgcatg cttggagcag gaccctgaca gcaaggttgc ctgtgaaacc tgcaccaaga 240

ccaacatggt 250

<210> 2203
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2203

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gccccactca accaccacac 60

ntctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt ncaaaagtat 120

aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac accctgacaa 180

gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag 240

caaagttgcc tgcgaaacat gcaccaaaac caacttggtc atggtcttcg gagag 295

<210> 2204
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2204

gncgcngcac gcgtacgtna gctcggnatt cggctcgagg gccccactca accaccacac 60

cactctctct gctcttcttc tacctttcaa gtttttaaag tattaagatg gcagagacat 120

tcctatttac ctcagagtca gtgaacgagg gacaccctga caagctctgc gaccaaatct 180

ccgatgctgt cctcgacgct tgccttgaac aggacccaga cagcaaggtt gcctgcgaaa 240

catgcaccaa gaccaacttg gtcatggtct tc 272

<210> 2205
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2205

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gccaagcccc actcaaccac 60

cacaccactc tctctgctct tcttctacct ttcaagtttt taaagtatta agatggcaga 120

gacattccta tttacctcag agtcagtgaa cgagggacac cctgacaagc tctgcgacca 180

aatctccgat gctgtcctcg acgcttgcct tgaacaggac ccagacagca aggttgcctg 240

cgaaacatgc accaagacca acttggtcat ggtctt 276

<210> 2206
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2206

ntcntatgca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccaaaac caacttggtc atggtcttcg 300

gagaaat 307

<210> 2207
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2207

tcgcangcac gcgtacgtna gctcggaatt cggctcgagg ccatttgggn agttaggttc 60

tgcacgctct gcttccagcg agtgttcttt cttcgtttca acaccttaat ttgcacacgc 120

tgcttcttca gcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa 180

cgagggtcac cccgacaagc tgtgcgacca gatctctgat gcagtgctcg atgcgtgcct 240

gaacaggacc ctgacagcaa ggttgcctgt gagacatgca ccaagaccaa catggtcagg 300

tcttggagag a 311

<210> 2208
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2208

nnncgcatgc acgcgtacgt aagctcggaa ttcggctcga ggactgttat gtttaaattg 60

tagtcatggt ggtgtttttg gctgtgaatt tgctcatatg tgctaattat gtgttcttgt 120

ttgatgttac tctacagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 180

agtgaacgag ggcaccctg acaagctctg tgaccagatc tccgatgctg tgctncgatg 240

catgcttgga gcaggaccct gacagcaang ttgcctgtga aacctgcacc aagaccaaca 300

tggtgatggt 310

<210> 2209
<211> 338
<212> nucleic acid
<213> Glycine max

<400> 2209

tcgcatgcac gcgtacgtaa gctcggaatt cnnctcgagg caagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaactc cgatgctgtc ctcgacgctt gcctcgagca ggacccagac 240

agcaaagttg cctgcgaaac atgcaccaaa accaacttgg tcatggtctt cggagaaatc 300

acgaccaggc caagttgatt acgagaagta gtgcgtga 338

<210> 2210
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2210

antcncangc acgcgtacgt aagctcggaa ttcggctcga gaacagcaca aagcgggtta 60

ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttgganccag gaccctgaca 240

gcaaggttgc ctgtgaaacc tgcaccaaga ccaacatggt gatggttt 288

<210> 2211
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2211

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc accaaaacca acttggtcat ggtcttcgga 300

gaaatcacga c 311

<210> 2212

<211> 328
<212> nucleic acid
<213> Glycine max

<400> 2212

angtctcang cacgcgtacg taagctcgga attcagctcg agcngctcga gcacacctct 60

cctcgttcac gctacccctt tctgctctnc ttctaccttt caagttttna angtntaaag 120

gtggcagaga cattcctatt tacctcagag tcgntgaacg agggacaccc tgnnaagctc 180

tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc agacagnaaa 240

gttgcntgcg aaacatncac caaaaccaat tggtcatggt cttcggagaa atcacgacca 300

aggccaacgt tgatacgaga agatatgc 328

<210> 2213
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2213

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcaagcccc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacaccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

gacagcaaag ttgcctgcga aacatgcacc aaaaccaatt ggtcatggtc ttcggagaaa 300

tcacgacca 309

<210> 2214
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2214

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcaaattgtg aaggagaatt 60

tcgacttcag acctggaatg atcaccatta acttggacct taagaggggt ggtcataggt 120

tcctcaagac agctgcttat ggacactttg gaagggatga tgcagacttc acctgggaag 180

ttgtgaagcc actcaagtca gagaagcctc aagcttaaga gtgttgttaa gttaatcact 240

ccccttcagtg gatgtcttgc tgggtgtgga tgaataattt gcgtgtttca tgactacta 299

<210> 2215
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2215

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccaaaac caacttggtc atggtct 297

<210> 2216
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2216

gtcgcangca cgcgtacgtn agctcggaat tcggctcggg ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccannac caacttggtc atggtctt 298

<210> 2217
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2217

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag ggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggaccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtg 284

<210> 2218
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2218

ttgcatgcan gcgtacgtaa nctcgggaat tcggctcgag nggagttagg ttctgcacgc 60

tctncttcca gcgagtgttc tttcntcgtt tcaacacctt aatttgcang acgctgcttn 120

tnaaganttg agaaatggca caagaaacct ttctattcac atctgaatct ntaaacgagg 180

gtcaccccga naagctgtgc gancagatct ctnatgcagt gctcgatgcg tgccttgaac 240

aggacnctga cagcaaggtt gcctgtgaga catgcaccaa gaccaacatg gcatggtc 298

<210> 2219
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2219

gtngnnggcn nngnacggta cgtgagctcg gaattcggct cgagcaggca agccccactc 60

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcagcaaaa ccaacttggt catggtcttc 300

ggn 303

<210> 2220
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2220

ttacatgcac acgtacgtaa gctcggaatt cngctcgaga ggcaagcncc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc nagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacacccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

gatagcaaag ttgcctgcna aacatgcacc aaaaccaact tggtcatggt cttcggagaa 300

a 301

<210> 2221
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2221

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggggccaggc aagccccact 60

caaccaccac acctctcctc gttcacgcta cccctttctg ctcttcttct acctttcaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaga accaacttgg tcatggtctt 300

cgga 304

<210> 2222
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2222

tancgcatgc acgcgngtaa nntnnnaatc ggnattcggc tcgagtttga ggccaggcaa 60

gccccactca accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac 120

ctttcaagtt ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg 180

aacgagggac accctgacaa gctctgcgat caaatctccg atgctgtcct cgacgcttgc 240

ctcgagcagg acccagacag caaagttgcc tgcgaaacat gcaccaaaac caacttggtc 300

atggtcttcg g 311

<210> 2223
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2223

annctaatgc acgcgtacgt aagctcggaa ttcggctcga gaacaacagc acaaagcggg 60

ttactgtctg ttcaagctac catctctctc tctctttctt agtgcctcct tgccagaagt 120

taaaatggcc caagaaactt tcctattcac atctgaatca gtgaacgagg ggcaccctga 180

caagctctgt gaccagatct ccgatgctgt gctcgatgca tgcttggagc aggaccctga 240

cagcaaggtt gcctgtgaaa cctgcaccaa gaccaacatg gtga 284

<210> 2224
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2224

nncnaannnn cgcatgcacg cgtacgtaag ctcggaattc ggctcgaggc agacttaaca 60

acagcacaaa gcgggttact gtctgttcaa gctaccatct ctctctctct ttcttagtgc 120

ctccttgcca gaagttaaaa tggcccaaga aactttccta ttcacatctg aatcagtgaa 180

cgaggggcac cctgacaagc tctgtgacca gatctccgat gctgtgctcg atgcatgctt 240

ggagcaggac cctgacagca aggttgcctg tgaaacctgc accaagacca acatggtga 299

<210> 2225
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2225

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gatttgaggc caggcaagcc 60

ccactcaacc accacacntc tncncgttca cgctacccct ttctgnctct tcttgctncc 120

tttcaagttt taaaagtata aagatggcag agacattcct atttacctca gagtcggtga 180

acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc 240

tcgagcagga cccagacagc aaagttgcct gcganacatg caccaaaacc aacttggtca 300

tggtctngga gaaatcacga ccaa 324

<210> 2226
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2226

ntcgcangca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca 60

acnaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgncgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg 300

gaga 304

<210> 2227
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2227

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca gcaaaaccaa cttggtcatg gtcttcggag 300

<210> 2228
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2228

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gggccaggca agccccactc 60

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcnaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtcttc 300

gg 302

<210> 2229

<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2229

gtcgcangca cgcgtacgta agctcggaat tcggctcgag caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ncaaaaccaa cttggtcatg gtcttcgg 298

<210> 2230
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2230

ttanagtcgc angcacgcgt acgtaagctc ggaattcnnc tcgagncaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccaaaacc aacttggtca tggtcttc 298

<210> 2231
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2231

tgatttgagg ccaggcaagc ccngctcaac caccacacnt ctcctcgttc acgctacccc 60

tttctnctct tcttctacct ttcangtttt aaaagtataa agatggcaga gacattccta 120

tttacctcag agtcggtgaa cgagggacac cctgacaagc tctgcgacca aatctccgat 180

gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcctg cgaaacatgc 240

accaaaacca acttggtcat ggtcttcgg 269

<210> 2232

<211>   290
<212>   nucleic acid
<213>   Glycine max

<400>   2232

ncaattaana gtcgcangca cgcgtacgta agctcggaat tcggctcgag gttaggttct   60

gcacgctctg cttccagcga gtgttctttc ttcgtttcaa caccttaatt tgcacacgct   120

gcttcttcag cttgagaaat ggcacaagaa acctttctat tcacatctga atctgtaaac   180

gagggtcacc ccgacaagct gtgcgaccag atctctgatg cagtgctcga tgcgtgcctt   240

gaacaggacc ctgacagcaa ggttgcctgt gagacatgca ccaagaccaa   290

<210>   2233
<211>   306
<212>   nucleic acid
<213>   Glycine max

<400>   2233

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca   60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt   120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac   180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg   240

acccagacag caaagttgcc tgcgaaacat gcaccanaac caacttggtc atggtcttcg   300

gagaaa   306

<210>   2234
<211>   311
<212>   nucleic acid
<213>   Glycine max

<400>   2234

tnangnacgc gtacgtaagc tcggaattcg gctcgagcng ctcgaggcaa gccccactca   60

accaccacac acgctcctcg tncacgctac ccctttctgg ctcttcttct accnttcaag   120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg   180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca   240

ggaccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtcttc   300

ggagaaatca c 311

<210> 2235
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2235

natcgcatgc acgcgtacgt nagctcggaa ttcggctcga gcaacagcac aaagcgggtt 60

actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg ccagaagtta 120

aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg caccctganc 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctgac 240

agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatggttt 289

<210> 2236
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2236

agcagactta acaacagcac aaagcgggtt actgtctgtt caagctacca nnnnnnnnnn 60

nnnnnnntag tgcctccttg ccagaagtta aaatggccca agaaactttc ctattcacat 120

ctgaatcagt gaacgagggg caccctncac aagctctgtg accagatctc cgatgctgtg 180

ctcgatgcat gcttggagca ggaccctgac agcaaggttg cctgtgaaac ctgcaccaag 240

accaacatgg tgatggtttt 260

<210> 2237
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2237

ntcanntacg cgtangtanc actgcgtacn tnagctcgga attcggctcg agcagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgtacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatggtg atggtttt   298

<210> 2238
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2238

tcgcngaacg ngtacgtaag ctcggaattc ggctcgangn catttgggag ttaggtttna   60

acgctcngcg tnnagngagt gatntttctt cgtntcanca cntnaaattg cancacgctg   120

cttcttcngc ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg   180

anggtcaccc cgacaagctg tgtgaccaga tctctgatgc antgctcgat gcgngccttg   240

aacaggaccc tgacagcaag ttgcctgtga gacatgcacc atgaccaaca tggtcaggtc   300

n   301

<210> 2239
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2239

acgtcgcang cacgcgtacg taagctcgga attcngctcg aggcaagccc cactcaacca   60

ccacacctct cctcgttcac gctacccctt tctgctactt cttctacctt tcaagtttta   120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc   180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc   240

cagacagcaa agttgcctgc gaacatgcac caaaaccaac ttggtcatgg tcttcggaga   300

aatcacgac   309

<210> 2240
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2240

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gttaacaaca gcacaaagcg   60

ggttactgtc tgttcangct accatctctc tctctctttc ttagtgcctc cttgccagaa   120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgcttggag caggnccctg 240

acagcaaggt tgcctgtgaa acctgcacca agaccaacat ggtgatggtt ttc 293

<210> 2241
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2241

acgcgtacgt aagctcggaa ttcggctcga gctcgagccg cagcacaaag cgggttactg 60

tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag aagttaaaat 120

ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagct 180

ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa 240

ggttgcctgt gaacctgcac caagaccaac atggtgatg 279

<210> 2242
<211> 181
<212> nucleic acid
<213> Glycine max

<400> 2242

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

g 181

<210> 2243
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2243

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggcagactt aacaacagca 60

caaagcgggt tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt 120

gccagaagtt aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg 180

gcaccctgac aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca 240

ggaccctgac agcaaggttg cctgtgaaac ctgcaccaag accaacatg 289

<210> 2244
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2244

nncgcangca cgcgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct gcaccaagac caacatg 287

<210> 2245
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2245

aagtcgcatg cacgcntacg naagctcggc attnggcncg cggnccaggc aagcaccact 60

caaccancac acatctnctc gttcaagcta cccctttgtn cnctncttct aantttcaag 120

ttttaaaagt atacagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccntgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcntcgagca 240

ggacccagac agcaangttg cctgcgaaac atgcaccnga accaacttgg tcatggtctt 300

cggagaaatc 310

<210> 2246
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2246

ngtcgcangc acgcgtacgt nagctcggaa ttcggctcga gccancacac ctctcctcgt 60

tcacgctacc cctttctgct cttcttctac ctttcaagtt tnaaangtnt aaagatggca 120

gagacatncc tatttacctc agagtcggtg aacgagggac acccngacaa gctctgcgac 180

caaanctccg atgcngtcct cgacgcttgc ctcgagcagg acccagacag caaagntgcc 240

tgcgaaacan gcaccaaaac caacttggtc atggtcttcg gaga 284

<210> 2247
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2247

ntntcgcang cacgcgtacg taagctcgga attcggctcg aggccaggca agccccactc 60

aaccaccaca ctggctcctc gttnacgcta ccccttctn cctcttcttc tacctttcaa 120

gttttaaaag tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg 180

gacaccctga caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc 240

aggacccaga cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtc 299

<210> 2248
<211> 182
<212> nucleic acid
<213> Glycine max

<400> 2248

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat 180

gg 182

<210> 2249
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2249

tgcgngcacg cgtacgtnag ctcggntntt cggctcgagg cagacttaac aacagcncan 60

anccnggtta ctnnctgtnc aagctancca tctctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctanncacat ctgaatcagt gaancgaggg 180

gcacctgaca agctctgtga ccagatctcc gatgctgtgc tcgatgcncg nttggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc ngcaccaaga ccaacatggt gatggttttc 300

ggagannnca caa 313

<210> 2250
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2250

gcacgcgtac gtaagctcgg aattcggctc gagcaggcaa gccccactca accaccacac 60

ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt ttaaaagtat 120

aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac accctgacaa 180

gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag 240

caaagttgcc tgcgaaacat gcancaaaac caacttggtc atggtcttc 289

<210> 2251
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2251

atttgaggcc aggcaagccc cactcaacca ccacacctct cctcgttcac gctacccctt 60

tctgctcttc ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt 120

tacctcagag tcggtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 180

tgtcctcgac gcttgcctcg agcaggaccc agacagcaaa gttgcctgcg aaacatgcac 240

caaaaccanc ttggtcatgg tctt 264

<210> 2252
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2252

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcaagcccca ctcaaccacc 60

acacctctcc tcgttcacgc tacccctttc tgctcttctt ctacctttca agttttaaaa 120

gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag ggacaccctg 180

aaagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgaaa catgcacnaa aaccaattgg tcatggtctt cggagaaatc 300

acgaccaagg ccaag 315

<210> 2253
<211> 191
<212> nucleic acid
<213> Glycine max

<400> 2253

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagcttgt gaccagatct ccgatgctgt gctcgatgca 120

tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa cctgcaccaa gaccaacatg 180

gtgatggttt t 191

<210> 2254
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2254

gttgcangca cgcgtacgta agctcggaat tcggctcgag agcagactta acaacagcac 60

aaagcgggtt actgtctgtt caagctnnca nctctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gaacganggg 180

caccctgtgc aagctctgtg accagatctc cgatgctgtg ctcgatgcat gattggagca 240

ggaccctgac agcaaggttg nctgtgaaac ctgcaccaag ancaacatgg tgatggtttt 300

cgga 304

<210> 2255
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2255

tcgcatgcnc gcgtacgtna gctcggnatt cggctcgagc anaangcngg ttactgtctg 60

ttcaagctac catctctctc tctctttctt antgcctcct tgccagangt taaaatggcn 120

caagaanctt tcctattcac atctgaatnn gtgaacgagg ggcaccctga acaanctctg 180

tgancagatc tccgatgctg tgctcgntgc atncttggag caggaccctg acagcnaggt 240

tncctgtgna acntgcacca agnccancat ggngatggtt ttcggagann tcacaaccan 300

ggccaacgtg gactatg 317

<210> 2256
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2256

cngcacgcgt acgtaagctc ggaattcggc tcgagggaga ttggtgctgg tgaccaaggt 60

catatgttcg gctatgnnct gacgangntc ccgagctcat gcccntgagc catgtccttg 120

ccacgaagct cggtgtcaag ctcancgagg ttcggaanaa cgggacatgc ccttggctga 180

ganctgntgg caagaccnag gtcantgttg nnnactacaa tggcaagggn gccat 235

<210> 2257
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 2257

cgatgcacgc gtacgtaagc tcggaattcg gctcgagttt ggggagttag gttctgcacg 60

ctctgcttcc agcgagtgtt ctttcttcgt ttcaacaacc ttaatttgca cacgctgctt 120

cttcagcttg agaaatggca caagaaacct ttctattcac atctgaatct gtaaacgagg 180

gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg tgccttgaac 240

aggaccctga cagcaagttg cctgtgagac atgcaccaag accaactggt caggtctttg 300

gagagatcac aaccagggc 319

<210> 2258
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2258

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca acaaaaccaa ttggtcatgg tcttcggaga 300

aatcac 306

<210> 2259
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2259

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

ctgacagcaa ggttgcctgt gaaacctgca accaagacca acatggtgat ggnttncgga 300

<210> 2260
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 2260

gtcgcatgca cgcgtacgta agctcggaat tnggctcgag ctcgagccgc aggaaagccc 60

cactcaacca ccacacctct cctcgttcac gctacccctt aactgcttct tcttctacct 120

ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa 180

cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct 240

cgagcaggac ccagacagca aagttgcctg cgaaacatgc accaaaacca cttggtcatg 300

gtcttcggag aaatcagacc aaggccaagt 330

<210> 2261
<211> 180
<212> nucleic acid

<213>   Glycine max

<400>   2261

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ntcctattca catctggatc   60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcnntgc   120

atgcttggag cagganccctg acagcaaggt tgcctgtgaa acctgcacca agaccaacat   180

<210>   2262
<211>   286
<212>   nucleic acid
<213>   Glycine max

<400>   2262

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag caagccccac tcaaccacca   60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag   120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga   180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga   240

cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatg   286

<210>   2263
<211>   300
<212>   nucleic acid
<213>   Glycine max

<400>   2263

gtcgcangca cgcgtacgta agctcggaat tcggctcgag tttgaggcca ggcaagcccc   60

actcaaccac cacacctctc ctcgttcacg ctacccttt ctgctcttct tctacctttc   120

aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga   180

gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga   240

gcaggaccca gacagcaaag ttgcctgcga aacatgcacc aaaaccnact tggtcatggt   300

<210>   2264
<211>   332
<212>   nucleic acid
<213>   Glycine max

<400>   2264

cgcangcacg cgtacgtaag ctcggaattc ggctcgagcg acttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct cnttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgaccaga tctccgatgc tgtgctcgnt gcatgcttgg agcaggaccc 240

tgacagcaag gttgcctgtg aaacctgcac caagaccaac atgtgatggt ttcggagagn 300

tcacaaccan gcaacgtgga ctatgagagg tt 332

<210> 2265
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2265

tcacgngtac gtnagctcgg aattcggctc nagcttaaca acagcacaaa gcgggttact 60

gtctgttcaa gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa 120

tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaagacca acat 274

<210> 2266
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2266

gcnannnagg nnagtcgcan gcacgcgtac gtaagctcgg aattcggctc gaggcagact 60

taacaacagc acaaagcggg ttactgtctg ttcaagctac catctctctc tctctttctt 120

agtgcctcct tgccagaagt taaaatggcc caagaaactt tcctattcac atctgaatca 180

gtgaacgagg ggcaccctga caagctctgt gaccagatct ccgatgctgt gctcgatgca 240

tgcttggagc aggaccctga cagcaaggtt gcctgtgaaa cctgcaccaa gaccaacatn 300

<210> 2267
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2267

ngtcgcangc acgcgtacgt aagctcggaa ttcngctcga ggccccactc aaccaccaca 60

cntctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gnnaagttgc ctgcgaaaca tgcaccaaaa ccaacttggt catggtct 288

<210> 2268
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2268

gttgcangca cgcgtacgta agctcggaat tcggctcgag atttggagtt tggagcgact 60

naactaatca ttaatttgca ctcgctgttt cagcttcatc accctttctt ttgcatcatt 120

tatatctctt gagaaatggc acaagaaacc tntctattca catctgaatc tgtaaacgag 180

ggtcaccccg acangctgtg cgancagatc tctgatgcag tacttgatgc gtgccttgaa 240

caggaccctg acagcaaggt tgccngtgag acatgnacca agaccaacat g 291

<210> 2269
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2269

cacgcgtacg taagctcgga attcggctcg agncaaagga gtgatttgga gtttggagcg 60

actgaactaa tcattaattt gcactcgctg tttcagcttc atcacccttc ttttgcatca 120

tttatatctc ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg 180

agggtcaccc cgacangctg tncnaccaga tctctgatgc agtacttgat gcgtgccttg 240

aacnggaccc tggacagcaa ggttgcctgt gagacatgca ccaagaccaa catggtct 298

<210> 2270
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2270

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcagacttaa caacagcaca 60

aagcgggtta ctgtctgttc aagctaccat ctnctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg 180

caccctgaac aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca 240

ggaccctgac agcaaggttg cctgtgaaac ctgcaccaag accaacatgg tgatgg 296

<210> 2271
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2271

gtcncatgca cgcgtacgta agctcggaat tcggctcgag gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc 180

ctgacaagct ctgtgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc 240

nncgacagca aggttgcctg tgaaacctgc accaagacca acatggtg 288

<210> 2272
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2272

nagtcgcatg cacgcgtacg taagctcgga attcngctcg aggcaagccc cactcaacca 60

ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt caagttttaa 120

aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc 180

tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc 240

agacagcaaa gttgcctgcg aaacatggca ccaaaaccaa cttggtcatg gtcttcgga 299

<210> 2273
<211> 300
<212> nucleic acid
<213> Glycine max

<400>	2273

gcngcacgcg tacgtaagct cggaattcgg ctcgaggcca ggcaagcccc actcaaccac 60

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 120

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggacacccct 180

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 240

gacagcaaag ttgcctgcga aacatgcacc anaaaccaac ttggtcatgg tcttcggaga 300

<210>	2274
<211>	297
<212>	nucleic acid
<213>	Glycine max

<400>	2274

acgtcgcang cacgcgtacg taagctcgga attcggctcg agggagtttg gagcgactga 60

actaatcatt aatttgcact cgctgtttca gcttcatcac ccttcttttg catcatttat 120

atctcttgag aaatggcaca agaaaccttt ctattcacat ctgaatcgta aacnagggtc 180

accccgacaa gctgtncnat cagatctctg atgcagtact tgatgcntgc cttgancagg 240

nccctgacag caaggttgcc tgtgagacnt gcaccaagac caacatggtc atggtct 297

<210>	2275
<211>	296
<212>	nucleic acid
<213>	Glycine max

<400>	2275

gcangcacgc gtacgtnagc tcggaattcn gctcgaggcc ccactcaacc accacacctc 60

tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta aaagtataaa 120

gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc ctgacaagct 180

ctgcgacnna atctccgatg ctgtcctcga cgcttgcctc gagcaggacc cagacagcaa 240

agttgcctgc gaaacatgca ccaaaaccaa ttggtcatgg tcttcggaga aatcac 296

<210>	2276
<211>	306
<212>	nucleic acid
<213>	Glycine max

<400> 2276

acgtcgcang cacgcgtacg tnagcnncgg aattcngctc gagcaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcaccaaaac caattggtca tggtcttcgg 300

agaaat 306

<210> 2277
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2277

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg gccaggcaag ccccactcaa 60

ccaccacacn nctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccaaaacc aacttgg 287

<210> 2278
<211> 206
<212> nucleic acid
<213> Glycine max

<400> 2278

gccacttacc anaaaacctg aagaaattgg tgctgntgac cagggtcaca tgtttggcta 60

tgccactgat gaaacccctg aattgatgcc attgagccat gttcttgcaa caaaactcgg 120

tgctcgtctc accgaggttc gcnagaacgg tactggcctt ggctgangct gatggaagac 180

ccaagtgacc gttgagtata caatga 206

<210> 2279
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2279

tgcacgcacg cgtacgtnag ctcggaattc ggctcgagac agcacaggag cgggttacng 60

tctgttcaag ctaccatctc tctctctctt tcntagtgcc tccttgccag aagttaaaat 120

ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggcacc ctgacaagcn 180

ctgcgaccag atctccgatg ctgtgctcga tgcatgcttg gagcaggacc ctgacagcaa 240

ggttgcctgt gaaacctgca ccaag 265

<210> 2280
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2280

nanngcncgn gtacgtaagc tcggant tcg gctcgagggc caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct tngtgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa ntctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ccataaccaa cttggtcatg g 291

<210> 2281
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 2281

gcacgcgtac gtaagctcgg aattcggctc gagatttgag gccaggcaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaacc ctttctgctc ttcttctacc tttcaagttt 120

tanaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg gcaccaaaac caattggtca tggtcttcgg 300

agaaatcaga ccaggccaag ttgattacga 330

<210> 2282
<211> 283
<212> nucleic acid

<213>   Glycine max

<400>   2282

tcgcangcac gcgtacgtaa gctcggaatt cngctcgagg caagccccac tcaaccacca   60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 240

cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtc   283

<210>   2283
<211>   302
<212>   nucleic acid
<213>   Glycine max

<400>   2283

ncgtcgcatg cncgcgtacg taagctcgga attcggctcg ngngccaggn aagccccact   60

caaccaccac acctctcctc gttcacgcta ccccttctg ctcttcttct acctttcang 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgnacgaggg 180

ncaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgngcn 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaat acnaacttgg tcatggtctt 300

cg   302

<210>   2284
<211>   284
<212>   nucleic acid
<213>   Glycine max

<400>   2284

nangcacgcg tacgtaagct cggaattcgg ctcgagcaga gttgagacca agacacactc   60

gttcatatat ctctctgctc ttctcttctc ttctacctct caagtttttg aagtataaag 120

atggcagaga cattcctatt cacctcggag tcagtgaacg agggacaccc tgataagctc 180

tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg aacaggaccn nacaancaag 240

gttgcctgng aaacatgcac caagaccaac ttggtcatgg tctn   284

<210>   2285

<211> 208
<212> nucleic acid
<213> Glycine max

<400> 2285

cangcacgcg tacgtaagct cggaattcgg ctcgagcatt ggtgtccctg agcccttgtc 60

agtgtttgtg gacacttatg gaactgggaa gattcctgac aaggagattc tgcaaattgt 120

gaaggagaat ttcgacttca gacctggaat gatcaccatt aacttggacc ttaanagggg 180

tggtcatagg ttcctcaaga canntgct 208

<210> 2286
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2286

gcagacttna caacagcaca nagcgggtta ctgtctgttc aangctacga tctctgtctc 60

tgttatctta gtgcctacct tgccagaagn nannatggcc caatnaantt tccnattcac 120

atctgantca ntgaacnatg ggcaccctga naanctctgt gnccagatct ccgatgctgt 180

gctcgatgca tgcttggagc aggaccctga nagcnaggtt gcntgtnaaa cctgnaccaa 240

gaccaacatg gtgatggtnt tcggagagat 270

<210> 2287
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2287

nntcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggntttgagg ccaggcaagc 60

cccactcaac caccacacnt ctcctcgttc acgctacccc tttctggctc ttcttctacc 120

tttcaagttt taaaagtata aagatggcag agacattcct atttacctca gagtcggtga 180

acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc 240

tcgagcagga cccagacagc aaagttgcct gcgaaacatg caccanaacc aacntggtca 300

tg 302

<210> 2288

<211> 195
<212> nucleic acid
<213> Glycine max

<400> 2288

cgtaagctcg gaattcggct cgagncaatg atcaaattgc tgcggacctt aaagagcatg 60

ttatcaagcc tgtcattctt gagaagtacc ttgatgagaa ncaccatctt ccaccttaac 120

ccttctggcc gttttgtcat tggtggccct catggtgatg ctggtctcac tggaagaaaa 180

tcatcattga tacct 195

<210> 2289
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2289

ngcntgtacg cgtacgtaag ctcggaattc ggctcgaggt caggcaagcc ccactcaacc 60

accacacctc tgcctgngtt cangctaccc ctttntgctc ttcttctacc tttgaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acganggaca 180

ccctgacaag ctctgcganc caaatctccg atgctgtcct cgacgnttgn ctcgagnagg 240

acccagacag naaagttgcc tgcgatanat gcaccannac caacttggtc atggtcttcg 300

gagaaatcac gacc 314

<210> 2290
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2290

tcgcngcacg cgtacgtaag ctcggaattc ggctcgagat ttgaggccag gcaagcccca 60

ctcaaccacc acacctctcc tcgttcacgc taccccttc tgctcttctt ctacctttca 120

agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag 180

ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag 240

caggacccag acagcaaagt tgcctgcgaa acatggcacc aaaaccaact tggtcatggt 300

ctt 303

<210> 2291
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2291

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cttaacaaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct gtgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtnn aaacctgcac caagaccaac atggt 285

<210> 2292
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2292

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggcagactta acaacagcac 60

aaagcgggtt actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg 180

caccctgaca agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc tggcaccaag accaacatg 289

<210> 2293
<211> 343
<212> nucleic acid
<213> Glycine max

<400> 2293

acngcgtacg tnanctcggn attcggctcg agggccaggc aagccccact caaccaccac 60

acctctcctc gttcacgcta ccccttctg ctcttcttct acctttcaag ttttaaaagt 120

atacagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg acaccctgac 180

aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca ggacncagac 240

agcaaagttg cctgcgaaac atgcaccaaa accaattggt catggtcttc ggagaaatca 300

cgacagccan gttgatagag agatatgcgt gacnctgcag aca 343

<210> 2294
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2294

antcgnntgc acgcgtacgt aagctcggaa ttcggctcga ggggcaagcc ccactcaacc 60

accacacntc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacancct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ccanaaccaa cttggtcat 289

<210> 2295
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2295

gtcgcangca cgcgtacgta nagctcggaa ttcggctcga gntgaggcca ggcaagcccc 60

actcaaccac cacacctctc ctcgttcacg ctaacccctt tctgctcttc ttctaccttt 120

caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 240

agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaacncac ttggtc 296

<210> 2296
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2296

agtagcangc acgcgtacgt aagctcggaa ttcggctcga gggcaagccc cactcaacca 60

ccacacntct cctcgttcac gctaccoctt tcttnctctt cttctacctt tncaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc accaaaacca acttgg 286

<210> 2297
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2297

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gngacattcc tatttacctc agagtcggtg aagagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccagaacc aacttggtca tggtcttcgg 300

agaaatcacg accaaggc 318

<210> 2298
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2298

ngnngcacgc gtacgtnagc tcggaattcg gctcgagttt gaggccaggc aagccccact 60

caaccaccac acgggctcct cgttnacgct accccttttct ncctcttctt ctacctttca 120

agttttaaaa gtataaaaat ggcagagaca ttcctattta cctcagagtc ggtgaacgag 180

ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag 240

caggacccag acagcaaagt tgcctgcgaa acatgcacca aaaccaactt 290

<210> 2299
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2299

gtcgcangca cgcgtacgta agctcggaat tcggctcgag agcagactta acaacagcac 60

aaagcgggtt actgtctgtt caagctacca tctctctctc tctttcttag tgcctccttg 120

ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt gaacgagggg 180

caccctgaca agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc tgcac 275

<210> 2300
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2300

ncgtcgcang cacgcgtacg taagctcgga attcggctcg agaggcaagc cccactcaac 60

cancacangg nncctcgttn acgctacccc tntctncctc ttcttctacc tttcagngtn 120

ttaaaagtat aaagatggca gagacattcc tatttaccag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgnt gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcntg cgaaacatgc nccaaaacca acttggncat ggtcttcgga 300

gaaatcag 308

<210> 2301
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2301

nngtcgangc acgcgtacgt aagctcggaa ttcggctcga nctcgagccg attcggctcg 60

aggccccant caaccaccac acctctanct cgttcacgct accccttct gctcttcttc 120

taactttcaa gttttaaaag tataaagatg gcagagacat tcctatttac ctcagagtcg 180

gtgaacgagg gacaccctga caagctctgc gaccaaatct ccgatgctgt cctcgacgct 240

tgcctcgagc aggacccaga cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg 300

<210> 2302
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2302

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcaggcaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacggcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaacat gcancaaaac caacttggtc atggt 295

<210> 2303
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2303

atgcacgcgt acgtaagctc ggaattcggc tcgaggccat ttgggagtta ggttctgcac 60

gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca nacgctgctt 120

cttcngcttg agaaatggca caagaaacct ttctattcac atctgaatct gtaaacgagg 180

gtcaccccga caagctgtgc gaccagatct ctgatgcagt gctcgatgcg tgcctgaaca 240

ggaccctgac agcaaggttg cctgtgagac atgcaccaag a 281

<210> 2304
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2304

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggggttact gtctgttcaa 60

gctaccatct ctctctctct ttcttagtgc ctccttgcca gaagttaaaa tggcccaaga 120

aactttccta ttcacatctg aatcagtgaa cgaggggcac cctgagaagt ctgtgaccag 180

atctccgatg ctgtgctcga tgcatgnttg gagcaggacc ctgacagcaa ggttgcctgt 240

naaacctgca ncaagancaa catggtgatg gntttncgga gagatcacaa acanngc 297

<210> 2305
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2305

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ggnacaaagn natcacaagt tcaancnact tntcnnnttc ttaangggcg tccntnccag 120

ncgttaaaat ggcccaagaa actttcctat ncacatctga atcagtgaac gangggcacc 180

ctgacagctc tgtgaccaga tctccgatgc tgtgctcgnt gcntgcntgg agcaggaccc 240

tgacagcnag gntgcctgtg aaacctgcac caagacnnac atggtgangg ttttcggang 300

anatcacaac 310

<210> 2306
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2306

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg gccaggcaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggacc 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc accannacca acttggtcat ggtct 295

<210> 2307
<211> 158
<212> nucleic acid
<213> Glycine max

<400> 2307

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cgaacaggac tcagacagca aggttgcctg cgaaacatgc accaagacca acttggtcat 120

ggtcttcgga gagacaccac caaggccaac gttgacta 158

<210> 2308
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2308

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gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcccaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgancaga tctccgatgc tgtgctcgat gcatgcttgg agcaggaccc 240

tgacagcaag gttgctgtga aacctgcacc aagaccaaca tgtgatggtt ttcggaanag 300

at 302

<210> 2309
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2309

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caccacacct ctcctcgttc acgctacnnc tttctgctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc caccaaaacc aacttggtca tggtc 295

<210> 2310
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2310

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aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc tattcacatc tgaatcagtg aacgaggggc 180

accctgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc ttggagcagg 240

accctgacag caaggttgcc tgtgaaacct g 271

<210> 2311
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2311

tnacangcac gcgtacgtaa gctcggaatt cggctcgagg gccaggcaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttcaagttt 120

taaaagtata aagatggcag agacattcct atttacctca gagtcggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccanaacc aattggtcat ggtttcggag 300

aatcac 306

<210> 2312
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2312

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accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagnggtga acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccanaacc aacttggtca tggtcttcgg 300

agaaatca 308

<210> 2313
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2313

acgtcgcang cacgcgtacg taagctcgga attcggctcg ngcttgagca gacttaacaa 60

cagcacaaag cgggttactg tctgntcaag ctaccatctc tctctctctt tcttagtgcc 120

tccttgccag aagttaaaat ggcccaanna actttccnat tcacatctga atcagtgaac 180

gaggggcacc ctgacaagct ctgtgaccag atctccgatg ctgtgctcga ngcatgcttg 240

gagcaggacc ctgacagcaa ggttgcctgt gaaacctgca ccaagaccaa 290

<210> 2314
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2314

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cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctncagagtc ggtgaacgag ggacaccctg 180

acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag caggacccag 240

acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc ttcg 294

<210> 2315
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2315

ncgtcgcang cacgcgtacg taagctcgga attcggctcg aggatttgag gccaggcaag 60

ccccactcaa ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc 120

tttnaagttt taaaagtata aagatggcag agacattcct atttacctca gagtcggtga 180

acgagggaca ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc 240

tcgagcagga cccagacagc aaagttgcct gcgaaacatg caccaaaacc aantggt 297

<210> 2316
<211> 233
<212> nucleic acid
<213> Glycine max

<400> 2316

acagcacnaa gcgggttact gtctgttcaa gctaccatct ctctactctc tttcttagtg 60

cntccttgct agangttana atggcccang anactttcct attcacatct gantnagtga 120

acgaggggca ccctgacaag ctctgtgncc agatctccga tgctgtgctc gatgcatgcn 180

tggagcagga ccctgacanc aaggttgcct gtgaaacctg caccaagacc anc 233

<210> 2317
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2317

tcgctgcacg cgtacgtaag ctcggaattc ggctcgaggc caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa ttggtcat 288

<210> 2318
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2318

nncgtcgcan gcacgcgtac gtaagctcgg aattcggctc ganactcgag ccgattcggc 60

tcgagggccc cactcaacca ccacacctct anctcgttca cgctaccacc tttctgctct 120

tcttctaact ttcaagtttt aaaagtataa agatggcaga gacattccta tttacctcag 180

agtcggtgaa cgagggacac cctgacaagc tctgcgacca aatctccgat gctgtcctcg 240

acgcttgcct cgagcaggac ccagacagca aagttgcctg cgaaacatgc accaaaacca 300

attg 304

<210> 2319
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2319

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cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt 120

caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 240

agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaaccaan tggtcatggt 300

cttcg 305

<210> 2320
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2320

cgcatgcacg cgtacgtaag ctcggaattc ggctcgaggg ccaggcaagc cccactcaac 60

caccacacct ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgaaacatgc accaaaacca attggtcatg gtcttcgga 299

<210> 2321
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2321

tcgcatgcac gcgtacgtna gctcggaatt cngctcgagc ngctcgagca cacctctcct 60

cgttcacgct acccctttct gctcttcttc tacctttcaa gttntaaaag tataaagatg 120

gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacacctgac aagnctgcga 180

ccaaactccg atgctgtcct cgacgcttgc ctcgagcagg acccagacag caaagttgcc 240

tgcgaaacat gcaccaaaac caattggtca tggtcttcgg agaaatcacg accaggccaa 300

gttgactacg agaaga 316

<210> 2322
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2322

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gagccatttg ggagttaggt 60

tctgcacgct ctgcttccag cgagtgttct ttcttcgttt caacacctta atttgcacac 120

gctgcttctt cagcttgaga aatggcacaa gaaacctttc tattcacatc tgaatctgta 180

aacgagggtc accccgacaa gctgtgcgac cagatctctg atgagtgctc gatgcgtgcc 240

ttgaacagga ccctgacagc aaggttgcct gtgagacatg caccaaga 288

<210> 2323
<211> 299
<212> nucleic acid

<213> Glycine max

<400> 2323

gtngcangca cgcgtacgta agctcggaat tcngctcgag gcaagcccca ctcaagcagc 60

acanctctcc tcgttcacgc taccccttnc tgctcttctt ctacctttca agttttaaaa 120

gtataaagat ggcagagaca ttnctattta cctcagagtc ggtgaacgag ggacaccctg 180

acaagctctg cgaccaaatc tccgatgntg tcctcgaatg naaatcgagc aggacccaga 240

nagcaaagtt gnctgcgana catgcaccaa aaccaacttg gtcatggtct tcggagaaa 299

<210> 2324
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2324

caacagcaca aagcgggtta ctgtctgttc aagctaccat ctctctctct ctttgcttag 60

tgcctccttg ccagaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt 120

gaacgagggg cacccgacaa gctctgtgac cagatctccg atgctgtgct cgatgcatgc 180

ttggagcagg accctgacag caaggttgcc tgtgaaacct ngcaccaaga ccnacatggt 240

gatggttttc ggag 254

<210> 2325
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2325

cacgcgtacg taagctcgga attcggctcg annttctcaa cattgtgaag gaaaactttg 60

atttcaggcc tggtatgatc tccatccaac cttgatctca agaggggtgg aaataacagg 120

tttttgaaga ctgctgccta tggacacttt ggaagagaag accctgacnt tcacatgggg 180

aagttggtcc naccccntcn agttgggnaa agccnaacca tttcatc 227

<210> 2326
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2326

gtcatgnagg acgnangacg tgnagctcag nattcggntc gagcgttcac gctaacccct 60

ttctggctct ncttcnanct ttcaagtttt aaaagtatan agatgngcag aganattcct 120

atttacctac agagtcggtn aacgagggac accctgacaa gctctgcgac caaatcccga 180

tgctntcctc gacgcttgcc tcgagcngga cccagacagc aaagttgcct gcgaaacatg 240

caccaaaacc aacttggtca tggtcttcgg agannicang accaaggcca acgt 294

<210> 2327
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2327

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggngggttac tgtctgtnca 60

anctaccatc tctctctctc tntcttagtg cctcccgtgn cagnngtnan aatggcccaa 120

naaactttcc tattnacatc tgaatcagtg aacgangggc anccganaan ctccgtgacc 180

agatntccga tgctgtgntc gatgcatgct tggagcagga ccctgacagc aaggttgcct 240

gtganacctg caccaagacc ancatggtgn tggtttncgg a 281

<210> 2328
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2328

tacgttncnc gcgtacgtaa gctcggaatt cggctcgaga acagnacaaa gcgggttact 60

gtctgttcaa gctaccatcc tctctctctc nttcttagtg cctcctnncn anaagttaaa 120

atggcccann anactttcct atncacatct gaatcantga acgaggggca cnctgacaag 180

ntctgtgncc agatctccgg tgctgtgctc gatgcatgct tggagcagga ccctgacagc 240

aaggntgcct ggaaacctgc acnaagacca acatggtgat ngntttcgga gann 294

<210> 2329
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2329

gntgcatgca cgcgtacgta agctcggaat tcggctcgag tgaggccagg caagccccac 60

tcaaccacca cacctctcct cgttcacgct accccttct gctacttctt ctacctttca 120

agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag 180

ggacaccctg acangctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag 240

caggacccag acagcaaagt tgcctgcgaa acatgcacca aaac 284

<210> 2330
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2330

naacgcangc acgcgtacgt aagctcggaa ttcggctcga gggccaggca agccccactc 60

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa cc 282

<210> 2331
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2331

angtcgcang cacgcgtacg taagctcgga attcggctcg nnctcgagcc gaatnggctc 60

gagcacaaag cgggntactg ncngntacaa gctacnatct ctcncctctc tntcttagtg 120

nctacctgcc agangtnaaa atggccnaag aaactntnct attnnnatct gnttcagtga 180

acgaggggca cnctgacaan ntctttgacg agatctccga tgctgtgntc gatgcatgct 240

tggagcagga ccctgacagc aaggttgcct gtnaaacctg cncnaananc aacatggtga 300

tggtttcgg 309

<210> 2332
<211> 262
<212> nucleic acid

<213> Glycine max

<400> 2332

ggccaggcaa gccccactca accaccacac aagtcntcgt cacacgctga cccctttctg 60

gtnttnttgt annttcaag ntttaaaagt ataaagatgg cagagacatt cctatttacc 120

tcagagtcgg tgaacgaggg acaccctgac aagctntgcg accaaatctc cgatgctgtc 180

ctcgacgctt gcctcgagca ggacccagac agcaaagttg cnngcgaaac atggcaccaa 240

aaccaattgg tcatggtntt cg 262

<210> 2333
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2333

tngtctcatg cacgcgtacg taagctcgga attcggctcg anctcgancc gnttcggcta 60

ctagaagccc cactcaacca ncacacctcn cnctcgttca ngctacccct ttctgctctt 120

cttctacctt caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag 180

tcggtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac 240

gcttgcctcg agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaac 296

<210> 2334
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2334

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gagcaacagc acaaagcggg ttactgtnng ttcaagctac catctctact ctctctntct 120

tagagcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 180

agtganccgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 240

atgcttggag caggaccctg acagcaaggt tgcctgtgaa acctgcacca a 291

<210> 2335
<211> 271
<212> nucleic acid

<213> Glycine max

<400> 2335

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cntctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gcaaagttgc ctgcgaaaca tgcaccaaaa c 271

<210> 2336
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2336

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac tggctcctcg tttncgctac ccctttctnc ctcttcttct acctttcaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaaa acca 284

<210> 2337
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2337

ncgtcgcang cacncgtacg taagctcgga attcggctcg nnctcgagcc gattcggctc 60

gagcaagccc cactgcaacc accacaacnt cttcctcgtt cacgactacc cctttctgct 120

cttcactcta cctttcaagt tttaaaagta taaagatggc agagacattc ctatttacct 180

cagagtcggt gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc 240

tcgacgcttg cctcgagcag gacccagaca gcaaagttgc ctgcgaaaca tgcaccaaaa 300

cca 303

<210> 2338

<211> 183
<212> nucleic acid
<213> Glycine max

<400> 2338

tcgcatgcac gcgtacgtna gctcggaatt cggctcgagt gaaaccccctg agtacatgcc 60

cctcagccat gtccttgcaa ccaaactcgg tgctcgcctc accgaggtta ggaaaaatgg 120

tacctgtgct tggctgaggc cagatggcaa gacacaagta actgttgagt actacaatga 180

caa 183

<210> 2339
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2339

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gggcagcgct tgatttgagg ccaggcaagc cccactcaac caccacacct ctcctcgttc 120

acgctacncc tttctgntct tcttctacct ttcaagtttt aaaagtataa agatggcaga 180

gacattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc tctgcgacca 240

aatctccgat gctgtcctcg acgcttgcct cgagcaggac ccagacagca aagttgcccg 300

cgaaacatgc accaaaacca ac 322

<210> 2340
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2340

tcgcangcac ngngtacgtn agctcggaat tcggctcgag ganagcacaa agcgggttac 60

ngtctgtnca agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa 120

atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca ccctgacaag 180

ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga ccctgacagc 240

aaggttgcct gtgaaacct 259

<210> 2341

<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2341

ncgcatgcac gcgtacgtaa gctcggnatt cngctcgnnc tcgagccgat tcggctcgag 60

aaacgagcca tttggnagtn aggtncctgc acgntctgct tacccgcnag tgttctttct 120

tcacttcaac accttaattt ncacacgctg cttcttcngc ttgaganatg gcacaagaaa 180

cntttctatt cacatctgaa tctgtaaacg anggtcaccc cgacaagctg tgcgaccaga 240

tctctgatgc agtgctcgat gcgtgccttg aacaggaccc tgacagcaag gttncctgtn 300

agacatgcn 309

<210> 2342
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2342

cgtgcagcgt acgtaagctc ggaattcggc tcgagcagac ttaacaacag cacnaagcgg 60

gttantgtct gttcaagcta ccatctctct ctctntttct tagtgcctcc ttgccagang 120

ttaaaatggc ccaanaaact ttcctnttca catctgaatc agtgaacgag gggcaccctg 180

acaagntctg tgaccagatc tccgntgctg tgctcgatgc atgcttggag caggaccctg 240

acancaaggt tgcctgtgan acctgcacca agaccaa 277

<210> 2343
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2343

gtcgcangca cgcgtacgtn agctcggnat tcggctcgag gnggccaggc aagccccact 60

caaccaccac acctctcctc gttcacgcta cccctttctg ctcttcttct acctttcaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ttcgacgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaaa nccaact 287

<210> 2344
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2344

cacgcgtacg taagctcgga attcngctcg aggcaagccc cactcaacca ccacacctct 60

cctcgttcac gctacccctt tctgctcttc ttctaccttt caagttttaa aagtataaag 120

atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc tgacaagctc 180

tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc agacagcaaa 240

gttgcctgcg aaacatgcac caaaaccaat tggtcatgnt cttcggagaa atcacgacca 300

ggccaagntg actacgagaa g 321

<210> 2345
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2345

ngtcgcangc acgcgtacgt nagctcggna ttcggctcgn nntcgagccg aatcggctcg 60

agcaaagacc ccactcaacc accaancctc tcctcgttca cgctacccct ttctgctctt 120

cttctacctt tcaagtttta aaagtataaa gatggcagag acattcctat ttacctcaga 180

gtcggtgaac gagggacacc ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga 240

cgcttgcctc gagcaggacc cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa 300

ttg 303

<210> 2346
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2346

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tcnagccggt gatttggagt 60

ttggagcgac tgaactaatc attaatttgc actccgctgt ttcagcttca tcacccttct 120

tttgcatcat ttatatctct tgagaaatgg cacaagaaac ctttctattc acatctgaat 180

ctgtaaacga nggtcacccc gacangctgt ncnancagat ctctgatgca gtacttgatg 240

cgtgcctgan caggaccctg acagcaaggt tgcctgtgag acatgcacca agaccaantg 300

gtcatgg 307

<210> 2347
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2347

gtcnctgcac gcgtacgtaa gctcggaatc ggctcgannc tcgagccgaa tcggctcgag 60

aacagcacaa agcgggttac tgtcacttca agctaccatc tatctctntn ctttcttagt 120

gcntccttgg ccanaagtta aaatggccca agaaactttc ctattcacat ctgaatcagt 180

gaacgagggg caccctgaca agctctgtga ccagatctcc gatgctgtgc tcgatggcat 240

gcttggagca ggaccctgac agcaaggttt nctgtgnaaa cntggtacca agaccaacat 300

ggtgatggtt ttcggn 316

<210> 2348
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2348

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gccccactca accaccacac 60

cactctctct gctcttcttc tacctttcaa gtttttaaag tattaagatg gcagagacat 120

tcctatttac ctcagagtca gtgaacgagg gacaccctga cagctctgcg accaaatctc 180

cgatgctgtc ctcgacgctt gccttgaaca ggacccagac ancaaggttg cctgcgaaac 240

atggcaccaa gaccaattgg tcatggtctt cggagagatc a 281

<210> 2349
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2349

aaagtcgcan gcacgcgtac gtaagctcgg aattcggctc gagcactcaa ccaccacacc 60

tctcctcgtt cacgctaccc ntttctgnct ncttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gcaaagttgc ctggcgaaac atgcaccaaa accaacttgg tccatggtct tcgga 295

<210> 2350
<211> 491
<212> nucleic acid
<213> Glycine max

<400> 2350

tttacttnnc ccgnccggta caagtcataa attcccgggn cgacccacgc ntccnnccac 60

gcgtccgtac ggctgcgaga agacgacaga agggggcagc gcttgatttg aggccaggca 120

agccccactc aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta 180

cctttcaagt tttaaaagta taaagatggc aganacattc ctatttacct canagtcggt 240

gaacgaggga cnccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg 300

ccncgatcag gacccagaca gcaaanttgc ctgcaaaaca tgcaccaaaa accaacttgg 360

tcatggtctt cggagaaatc angaccaaan gccaacgtng actacngaag aanaatagtg 420

cgttnacacc tngcaggaac atcgngcttc gtctcaaaat gatttgngga ctggattcnc 480

naacaactgg g 491

<210> 2351
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2351

gtcgnangan gcacgcgtac gtnagctcgg aattcggctc gagncagcac aaagcgggtt 60

acngtctgtt caagctacca nctctctctc tctttcttag tgcctccttg ccagangtta 120

aaatggccca agaaacttnc ctanncacat ctgaatcagt gaacgagggg caccctgaca 180

agctcngtga ccagatcncc gatnctgtgc ncgatgcatg cttggagcag gaccctgaca 240

gcaaggtngc ctgtgaaanc tgcaccaaga ncaact 276

<210> 2352

<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2352

anggngnngc acgcgtacgt aagctcggaa ttcggctcga gnggcnagcc ccactcaacc 60

accacacctc tcctcgttca ngctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagagagcaa ggttgcntgc gaaacangca ccnaaaanca anttggtnat ggtccttcgg 300

ngattcacga ccang 315

<210> 2353
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2353

gccnangcac gcgtacgtaa gctcggaatt cggctcgagt gatttgangc taggcaagcc 60

ccantcaacc accacacctc tcctcgttca cgctacccct ttctgctctt cttctacatt 120

tcnagtttta aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac 180

gtnggacacc ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc 240

gagcaggacc cagacagcaa agttgcctgc gaaacatgca ccaaaac 287

<210> 2354
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2354

agtcgcangc acgcgtacgt aagctcggan ttcngctcga gggcaagccn cactcaacca 60

cnacacntct cctcgttnca cgctacccct ttgctnctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagca aagttgcctg cgatacatgc accaaaa 277

<210> 2355
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2355

cnntcaacnn gnanagtcgc angcacgcgt acgtaagctc ggaattcggc tcgaggcaga 60

cttaacaaca gcacaaagcg ggttactgtc tgttcaagct accatctctc tctctctttc 120

ttagtgcctc cttgccagaa gttaaaatgg cccaagaaac tttcctattc acatctgaat 180

cagtgaacga ggggcaccct gacaagctct gtgaccagat ctccgatgct gtgctcgatg 240

catgcttgga gcaggaccct gacagcaagg ttgcctgtga aacctggaac caaggnccan 300

tttgnn 306

<210> 2356
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2356

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagt gaggccaggc aagccccact 60

caaccaccac acctctcctc gttcacgcta ccccttctg ctcttcttct acctttcaag 120

ttttaaaagt ataaagatgg cagagacatt cctatttacc tcagagtcgg tgaacgaggg 180

acaccctgac aagctctgcg accaaatctc cgatgctgtc ctcgncgctt gcctcgagca 240

ggacccagac agcaaagttg cctgcgaaac atgcaccaaa ancaa 285

<210> 2357
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2357

nagtcgcang cacgcgtacg taagctcgga attcggctcg agttgaggcc aggcaagccc 60

cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt 120

caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 240

agcaggaccc agacagcaaa gttgcctgcg aaacatgcac caaaacaact tggtcatg 298

<210> 2358
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2358

gtngcangca cgcgtacgta agctcggaat tcggctcgag nttgaggcca ggcaagcccc 60

antcaaccac canacacnct cctcgtnnat ggctacccct ttctnnctct tcttgctacc 120

tttncaagtt tnaaaagtat aaagatggca ganacattcc tatttacctc agagtcggtn 180

aacgagggac accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc 240

ctcgagcagg acccagacag caaagttgcn tgcgaaacat gcaccaan 288

<210> 2359
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 2359

tcgcatgcac gcgtacgtaa gctcggaatt cngctcgagg caagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tatanagatg gcagagacat tcctatttac ctcagagtcg gtgaacgngg ngacaccctg 180

acaagctctg cgaccaaatc tccgatgctg tcctcgacgc ttgcctcgag caggacccag 240

acagcaaagt tgcctgcgaa acatgcacca aaaccaactt ggtcatggtc ttcggagaaa 300

tcacgaccaa gccaagttga ctagaagaag atatg 335

<210> 2360
<211> 505
<212> nucleic acid
<213> Glycine max

<400> 2360

ttcnaacttt caccgcccag gtaacngtan aagaattccc ggnccgaccc acgngtcanc 60

ccangcgtcc gcccacgcgt ccgtacggct gcnanaagac gacagaangg gcaccgcttg 120

agcagactta acaacatnac aaaccgggtt actgtctgtt canggctacc atctctctct 180

ctctttctta ggtgnctcct tgccagnang tnnnaatgng gcnaagnaac ttncctattc 240

acatctgant cagtgaacga tgggnaccnt gacaagctct gtgaccagat cnccgatgcn 300

gtgctcgatg cangcttgga gcaggaccct gacagcnncg ttgcctgtga aacctgcacc 360

aataccanca tggtgatggg ttttcggaga gatnccaanc gangccnaan nttgnaacta 420

ttaggaagat tngnggcgnt gacncatnca ggaananttn ctttgncgcc nngntnatgg 480

ntgctcctgn nggcnganaa ncttc 505

<210> 2361
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2361

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggcagactt aacaacagca 60

canagcgggt tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt 120

gccagaagtt aaaatggccc aagaancttt cctattcaca tctgaatcag tgaacgaggg 180

gcaccctgac aagctctgtg accagatctc cgatgctgtg tcgatgcatg cttggagcag 240

gaccctgaca gcaaggttgc ctgtgaaacc tgcaccaaga cca 283

<210> 2362
<211> 495
<212> nucleic acid
<213> Glycine max

<400> 2362

tttacnagct cttacgcggn caantaccgt gtntaggnat tcccgggctc gacncacgcg 60

tcagtacggc tgcgagaagn gaacnnaggg ggcaacacnt ggnttgangn catgcaagcc 120

ccactcaacc accacacctc ncctcgttca cgctacccct ttctgctctt cttctanctt 180

tcatntttta anncgtatan agatggcana gacattccta tttacntcag ngtcagtgaa 240

cganggacac nctgacaagc tctgcgagca aatctccagn tgctgtcctc gacgcttgcc 300

tcgancagga cccatacagc aaacttgcct gccaancatg ctccaaaacc ancttggtcn 360

tngtcttcgg anaaatcncn accaaggcca acnttgactn cnanangata ntgcgttaca 420

ctgcnggaac atnggcttct tctcatatga tntgggactg gattccnacn cctgcaaagt 480

cccttcgtcaa cattt 495

<210> 2363
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2363

gttgcatgca cgcgtacgta agctcggaat tcngctcgag aacagcacna agcgggttac 60

tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc agaagttaaa 120

atggcccaag aaactttcct attcacatct gaatcagtga acgagggcac cctgacaagc 180

tctgtgacca gatctccgat gctgtgctcg atgcatgctt ggagcaggac cctgacagca 240

aggttgcctg tgaaacctgc accaag 266

<210> 2364
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2364

agtcactgca cgcgtagtaa gctcggaatt cggctcganc tcgagccgat tcggctcgag 60

ggcagactta acaacagcac aaacgcgggt tactgtctgn tcaagctacc atctctctct 120

ctctttctta gtgcctcctt gccagaagtt aaaatggccc aagaaacttt cctattcaca 180

tctgaatcag tgaacgaggg gcaccctgac aagctctgtg accagatctc cgatgctgtg 240

ctcgatgcat gcttggagca ggaccctgac agcaaggttg cctgtg 286

<210> 2365
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2365

tcgcacgcac gcgtacgtna gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgacc agatctccga tgctgtgctc gatgcatgct tggagcagga 240

cccctgacagc aaagttggcc tgtgaaacct gcaccangng tgacatggtg atggtttcg 299

<210> 2366
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2366

naaaanaang gaaantcgca tgcacgcgta cgtnagctcg gaattcggct cgagggccag 60

gcaagcccca ctcaaccacc acacctctcc tcgttcacgc taccccttc tgctcttctt 120

ctacctttca agttttaaaa gtataaagat ggcagagaca ttcctattta cctcagagtc 180

ggtgaacgag ggacaccctg acaagctctg cgaccaaatc tccgatgctg tcctcgacgc 240

ttgcctcgag caggacccag acagcaaagt tgcctgcgaa actgcaccan aaccaattgg 300

tcatggtctt cggaga 316

<210> 2367
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2367

gtcgcngcac gcgtacgtga gctcggaatt cggctcgagg gccaggcaag ccccactcaa 60

ccaccacacc tctcctcgtt cacgctaccc ctttctgctc ttcttctacc tttacaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagacag caaagttgcc tgcgaaactg caccancacc aattggtca 289

<210> 2368
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2368

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggta acgagggaca 180

ccctgacaag ctctgcgacc aaatctccga tgctgtcctc gacgcttgcc tcgagcagga 240

cccagacagc aaagttgcct gcgaaacatg caccataacc aacttggtca tggtcttcgg 300

ag 302

<210> 2369
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2369

cgcatgcacg cgtacgtnag ctcggaattc ggctcgagtt tgaggccagg caagcnccac 60

tcaaccacca cacctctcct cgttcacgct accccttct gctacttact tctacctttc 120

aagttttaaa agtataaaga tggcagagac attcctattt acctannagc cggtgaacga 180

gggacaccct gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga 240

gcaggaccca gacagcaaag ttgcctgcga aacatgcacc aaaacnaa 288

<210> 2370
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2370

cgcangcacg cgtacgtaag ctcggaattc ngctcgagca agccccactc aaccaccaca 60

cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt tttaaaagta 120

taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca 180

agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gacccagaca 240

gcaaagttgc ctgcgaaact gcaccaaaac caatgggtca ngntctnaga aa 292

<210> 2371
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2371

gtcgcngcac gcgtacgtaa gctcggnatt cngctcgagg caagccccac tcaaccacca 60

cacctctacc tacgttcacg ctaccccttt ctgctcttct tctaccttta caagttttaa 120

aagtataaag atggcagaga cattcctatt tacctacaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcctc gagcaggacc 240

cagacagcaa agttgcctgc gaaacatgca ccaaaaccaa cttggtca 288

<210> 2372
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2372

acgtcgctgc acgcgtacgt aagctcggaa ttcggctcga ggtgatttgg agtttggagc 60

gactgaacta ntcattaatt tgcacttcgc tgtttcagct tcatcaccct tcttttgcat 120

catttatatc tcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa 180

ccanggtcac cccgacaagc tgtgcgacca gatctctgat gcagtacttg atgcntgcct 240

gnncaggacc ctggacagcn aggtancctg tnagacatgc accaagacca acatggtca 299

<210> 2373
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2373

cgcatgcacg cgtacgtnag ctcggaattc ggctcgaggg caagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagantcg gtgancgagg gncaccctga 180

caagctctgc gaccaaatct ccgatgctgt cctcgacgct ngcctcganc aggacccana 240

cagcnaagtt gcctncgana catgnaccaa aaccaacttg gtc 283

<210> 2374
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2374

gannagtcgc angcacgcgt acgtaagctc ggaattcggc tcgagnnaca gcacaaagcg 60

ggttactgtc tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa 120

gttaaaatgg cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct 180

gacaagctct gtgaccagat ctccgatgct ntgctcgatg catgcttgga gcaggaccct 240

gacagcaagg ttgcctgtga aaactgcaac caagaccaan nat 283

<210> 2375
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2375

nanncgcang cacgcgtacg taagctcgga attcggctcg agctcgagcc gtggagtttg 60

gagcgactga actaatcatt aatttgcact ncgctgtttc agcttcatca cccttctttt 120

gcatcattta tatctcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg 180

taaacnaggg tcaccccgac aagctgtncn accagatctc tgatgcagta cttgatgcgn 240

gcctgancag gaccctgaca gcaaggttgc ctgtgagaca tgcaccaagn cccaacatgg 300

tc 302

<210> 2376
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2376

gcanngtnac gtaagctncg gaattcggct cgaggactta acaacagcac aaagcgggtt 60

actgtgctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgaa 180

caagctctgt gaccagatct ccgatgctgt gctcgatgca tgcttggagc aggaccctga 240

cagcaaggtt gcctgtgana cctgcaccaa 270

<210> 2377
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2377

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gagaccaagc cccactcaac 60

cancacacca ntctactctg ctcttcttct acctttcaag tttctaaagt atnaagatgg 120

cagagacatt cctattnacc tcagagtcag tgaacnaggg acaccctgat caagctctgc 180

gagccanatc tccgatgctg tcctcgacgg cttgccttga acaggaccca gacagcaagg 240

ttgcctgcga aacatgcacc aagaccaact tggtcatggt cttcggagag atcaccncca 300

aggccaacgt tg 312

<210> 2378
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 2378

agtcgcatgc acncgtacgt aagctcggaa tttcggctcg aggcattgtg gcaagtggac 60

tagccagaag gtgcancncn gcaagtgtct tatgccattg gtgtgcncga ncctttgtnc 120

tgtatttgtt gacacctatg gcaccgggaa gatccatgat aaggagattc tcaacattgt 180

gaaggagaac ttgatttcan ncccggtatg atctcccatc aaccttgatn tcaagagggg 240

tgggaataac aggttcttga agatgctgca tatggacatt cggcagagag ncgnattcac 300

aggggatggt cnangccccc ccaatggg 328

<210> 2379
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2379

cagcacaang cgngttacng ncnngtcaag cnaccatctc tctctctctt tnttagtggc 60

ctccttgcca gaagttaaaa tngcccaaga aactttcnta ttcacatctn aanccagtna 120

acgaggggca ccctgacaag ctctgtganc agatcnccga tgcngtgctc gntgcatnnt 180

tggagcanga ccctgacagc aaggttgcct gtgaaacctg naccaanacc aacatggnga 240

ngggttcgga gagatcac 258

<210> 2380
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2380

gtcgcanang angcgnacgt ncagctcgga attcggctcg aggtccggta tgatctccat 60

caaccttnga tctcaagagg ggtgggaata acaggttctt gaagactgct gcatatggac 120

acttcggcag agaggaccct gacttcacat gggaagtggt caagcccctc aagtgggaga 180

nggcctaagg ccattcattc cacngcaatg tgctgggagt ttttnagcgt tgcccttata 240

atgnctatta tccataactt tccacgt 267

<210> 2381
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2381

agtcnnatna acgcgtacgt aagctcggaa ttcggctcga gtacggctgc nagaagacga 60

cagaaggggg cagcgcttga tttgaggcca ggcaagcccc actcaaccac cacacctctc 120

ctcgttcacg ctacccottt ctgctcttct tctacctttc aagttttaaa agtataaaga 180

tggcagagac attcctattt acctcagagt cggtgaacga gggacaccct gacaagctct 240

gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca gacagcaaag 300

ttgcctgcga a 311

<210> 2382
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2382

tttgaggcca ggcaagcccc actcaaccac cacacctctc ctcgttcacg ctacccottt 60

actgctctnc ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt 120

tacctcagag tcggtgaacg agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 180

tgtcctcgac gcttgcctcg agcaggaccc agacagcaaa gttgcctgcg aaaca 235

<210> 2383
<211> 168
<212> nucleic acid
<213> Glycine max

<400> 2383

ncngcncgng tacgngtacg cnagctcgga attcggctcg aggtgctggt gaccagggtc 60

acatgtttgg ctatgccact gatgaaaccc ctgaattgat gccattgagc catgttcttg 120

caacaaaact cggtgctcgt ctcaccgagg ttcgnaagaa cggtacct 168

<210> 2384
<211> 156
<212> nucleic acid
<213> Glycine max

<400> 2384

tagtgcctcc ttgccagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 60

agtgaacgag gggcaccctg acaagctctg tgaccagatc tccgatgctg tgctcgatgc 120

atgcttggag caggaccctg acagcaaggt tgcctg 156

<210> 2385
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2385

ggccaggcaa gccccactca accaccacac ctctcctcgt tcacgctacn cctttctgct 60

cttcttctac ntttcaagtt ttaaaagtat aaagatggca gagacattnc ctatttacct 120

canagtcggt gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc 180

tcgacgcttg cctcgagcag gactcagaca gcaaagttgc ctgcgaaaca tggcaccaan 240

accaattggt catggtcttc ggagaatcac gnccaagg 278

<210> 2386
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2386

gtcgcangca cgcgtacgtn agctcggnat tcggctcgag ggccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct tcgacgcttg cctcgagcag 240

gacccagaca gcaaagttgc ctgcgaaaca tgcaccaa 278

<210> 2387
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2387

nngtcgcang cacgcgtacg taagctcgga attcggctcg agtacggctg cnagaagacg 60

acagaagggg gcagcgcttg atttgaggcc aggcaagccc cactcaacca ccacacctct 120

cctgcgttca gctacccctt tctgctcttc ttctaccttt caagttttaa aagtataaag 180

atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc tgacaagctc 240

tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg agcaggaccc agacagcaaa 300

gttgcctgc 309

<210> 2388
<211> 219
<212> nucleic acid
<213> Glycine max

<400> 2388

gctcggaatt cggctcgagc acaaagcggg ttactgtctg ttcaagctac catctctctc 60

tctctttctt agtgcctcct tgccagaagt taaaatggcc caagaaactt tcctattcac 120

atctgaatca gtgaacgagg ggcaccctga caagctctgt gaccagatct ccgatgctgt 180

gctcgatgca tgcttggagc aggaccctga cagcaaggt 219

<210> 2389
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2389

gngtacgtna gctcggaatt cggctccgag ngatttgagg ccaggcaagc cccactcaac 60

caccacacnt ctcctcgttc acgctacccc tttctgctct tcttctacct ttcaagtttt 120

aaaagtataa agatggcaga gacattccta tttacctcag agtcggtgaa cgagggacac 180

cctgacaagc tctgcgacca aatctccgat gctgtcctcg acgcttgcct cgagcaggac 240

ccagacagcn aagttgcctg cgaaactgca ccaaaaccaa tnggtcaggt cttcgggaat 300

cngacaagcc acgt 314

<210> 2390
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2390

ggaannntcg cangcacgcg tacgtnagct cggaattcgg ctcgagnact taacaacagc 60

acaaagcggg ttactgtctg ttcaagctac catctctctc tctctttctt agtgcctcct 120

tgccagaagt taaaatggcc caagaaactt tcctattcac atctgaatca gtgaacgagg 180

ggcacctgac aagctctgtg accagatctc cgatgctgtg ctcgatgcat gttggagcag 240

gacctgacag caaggttgcc tgtgaaacct gcaccaagac caanatg 287

<210> 2391
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2391

annantcgca ngcacgcgta cgtnagctcg gaattcngct cgagggccag gcnagcccca 60

ctcaaccacc acacnactcc tcnttcncgc taccccttt ctgcncntct tctacctttc 120

aagttttaaa agtatanaga tggcagagac attcctattt acctcagagt cggtgaacga 180

gggacaccct gacaagctct gcgaccaaat ctccgatgct gtgcttcgac gcttgcctcg 240

agcaggacnc agacagcaaa gttgcctgcg aaacatgcac c 281

<210> 2392
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2392

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag acattcctat ttacctcaga gtcggtgaac gaggacaccc 180

tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcntcg agcaggaccc 240

agacagcaaa gttgcctgcg aaacatgcag caaaa 275

<210> 2393
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2393

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagt acggctgcga gaagaccaca 60

gaagggggca gcgcttgaga ccaagcccca ctcaaccacc acaccactct ctctgctctt 120

cttctacctt tcaagttttt aaagtattaa gatggcagag acattcctat ttacctcaga 180

gtcagtgaac gagggacacc ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga 240

cgcttgcctt gaacaggacc cagacagcaa ggttgctgga aacatgnana agnccatntg 300

ggt 303

<210> 2394
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2394

cgtaagctcg gaattcggct cgaggtttca acaccttaat ttgcacacgc tgcttcttca 60

gcttgagaaa tggcacaaga nacctttcta ttcacatctg aatctgtaaa cgagggtcac 120

cccgacaagc tgtgcgacca gatctctgat gcagtgctcg atgcgtgcct tgaacaggac 180

cctgacagc 189

<210> 2395
<211> 183
<212> nucleic acid
<213> Glycine max

<400> 2395

gctgcacgcg tacgtaagct cggaattcgg ctcgagctca agtttttgaa gtatagagat 60

ggcagagaca ttcctattta cctcagagtc agtgaacgag ggacaccctg acaagctctg 120

tgaccaaatc tctgatgctg tcctcgacgc ttgcctcgaa caggacccag acagcaaggt 180

tgc 183

<210> 2396
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2396

gtcgcangca cgcgtacgtn nagctcggna ttcggctcgn ccctcgagcc gaattcggct 60

cgagcaagcc ccactcaacc accacaccnc tcctcgttca cgcacncccc tttctgctct 120

tcttccacct ttcaagtttt aaaagtataa agatggcaga gacattcctt ttacctcaga 180

gtcggtgaac gagggacacc ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga 240

cgcttgcctc gagcaggacc cagacagcaa agttgcctgc gaaacatgca cc 292

<210> 2397
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2397

gtcgcangca cgcgtacgtn agctcggnaa ttcggctcga gngatttgag gccaggcaag 60

ccccactaca accaccacac ctctcctacg ttcacgctac ccctttctgc tcttcttcta 120

cctttcaagt tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt 180

gaacgaggga caccctgaca agctctgcga ccaaatctcc gatgctgtcc tcgacgcttg 240

cctcgagcag gacccagaca gcaaagttgc c 271

<210> 2398
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2398

cncgcgtacg taagctcgga attcgnctcg aggcagactt tcacaacagc acaaagcggg 60

ttactgtctg ttcaagctac catctcgctc tcgctttctt agtgcctcct tggccanaag 120

tnaaaatggc ccaagaaact tncctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatgc atgtcttgga gcaggaccct 240

gacancaagg ttgcctgtga aactgcacca agaccaacat ggtgatg 287

<210> 2399
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2399

gcangcncgc gtncgtgagc tcggnnttng gctcgngggc caggcaagcn ccactcancc 60

accacacctc tnctcgttca cgctacccct ttctgctctt cttctacctt tcangtttta 120

anagtataaa gntggcagag acnttcctnt ttncctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgaccaa atctccgatg ctgtcctcga cgcttgcgtc gagnanggac 240

cnagacngca agttgcctgg gaaacatgca ccaggaccaa tttggtaatg gtctcgggaa 300

aatcgng 307

<210> 2400
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2400

ngtcgctgca cgcgtacgta agctcggaat tcggctcgag gacttaacaa cagcacaaag 60

cgggttactg tctgttcaag ctaccatctc tctctctctt tcttagtgcc tccttgccag 120

aagttaaaat ggcccaagaa actttcctat tcacatctga atcagtgaac gaggggnacc 180

ctganaagct cngngacnng nnntcngngn tgngnncngn gnangctnga gganggccct 240

nacagcaagg ttgcctgtga aacctgcacc aagaccaaca tggtgatggt t 291

<210> 2401
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2401

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gggccaggca agccccactc 60

aaccaccaca cctctcctcg ttcacgctac ccctttctgc tcttcttcta cctttcaagt 120

tttaaaagta taaagatggc agagacattc ctatttacct cagagtcggt gaacgaggga 180

caccctgaca agctctgcga cccaaatctc cgatgctgtc ctcgacgctt gncctcgagc 240

aggacccaga cagcaaagtt gcctgcgaaa catgcaccaa aaccaacttg gtcatggtct 300

tcgg 304

<210> 2402
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2402

anncangngt acgtnagctc ggaattcggg tcgagnacna cagnacaatg cgggttactg 60

tctgttcaag ctaccatcta ctctctcact ttcttacngc ctccttggcc agaagttaaa 120

atgacccaag aatctttcct agtcacatct gaatcagcga acgaggngca ccctgacaag 180

ctccgtgacc agatctccga tgctgtgccc gatgcatnct tggagcagga cccnacagca 240

agtttgcctg ttaaacctgt nccaagacca acatggtgat ggtttgggaa anatcacaac 300

cn 302

<210> 2403
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2403

gtcgcangca cgcgtacgta agctcggaat tcggctcgag cacctctcct cgttcacgct 60

accccttttct gctcttcttc tacctttcaa gttttaaaag tataaagatg gcagagacat 120

tcctatttac ctcagagtcg gtgaacgngn gacaccctga caagctctgc gaccaaatct 180

ccgatgctgt cctcgacgct tgcctcgagc aggacccaga cagnaaagnt nccngcgaaa 240

canntcacca aaaccaacnt ngnnanngnc atnggagaaa ncacgacca 289

<210> 2404
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2404

nnnanaacct tanaagtcgc angcacgcgt acgtaagctc ggaattcggc tcgaggctgc 60

gagaagacga cagaaggggg cagcgcttga tttgaggccg ggcaagcccc actcaaccac 120

cacacctctc ctcgttcacg ctaccccttt ctgctcttct tctacctttc aagttttaaa 180

agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga gggnnaccct 240

gacaagctct gcgaccaaat ctccgatgct gtcctcgacg cttgcctcga gcaggaccca 300

gacagcaaag ttgcct 316

<210> 2405
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2405

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gntttggagt ttggagcgac 60

tgaactaatc attaatttgc actcgctgtt tcagcttcat gcacccttct tttgcatcat 120

ttatatctct tgagaaatgg cacaagncac ctttctattc acatctgant ctgtaaacga 180

gggtcacccc gacatgctgt ncgaccagat ctctgatgca gtacttgatg cgtgccttga 240

acaggaccct gacagcaagg ttgn 264

<210> 2406
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2406

nctagcacnc gtacgtaagc tcgggaattc anctcganng caagccccac tcaaccacca 60

cacctctcct cgttcacgct accccttcct gctcttcttc tacctttcaa gttttaaaag 120

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 180

caagctctgc gaccaaatct gccgatgctg tcctgcgacg cttgcctcga gcaggaccca 240

gacagcaaag ttgcctggcg aaacatgtac caaaaccaac ttggtcatgg tnttcggaga 300

aatcacga 308

<210> 2407
<211> 331
<212> nucleic acid

<213> Glycine max

<400> 2407

tgcttgcacg cgtacgtaag ctcggaattc ggctcgaggt tgagaccaag acacactcgt 60

tcatatatct ctnctgctct tctcttcntt ctacctctca agtttttgaa gtataaagat 120

ggcagagaca ttcctattca cctcggagtc agtgaacgag ggacaccctg ataagctctg 180

cgaccaaatc tcgatgctgt cctcgacgct tgcctcgaac aggaccagat cagccangtt 240

gcctgcgnaa acatgcacca agaccaattg gtcatggtct tcggagagat caccaccagg 300

gccangntga cnncaagatc gtgcgtnaca c 331

<210> 2408
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2408

agtcgcaggg acgcgtacgt aagctcggna ntcggctcga ggcaagcccc actcaaccac 60

cncancgntc ctcgttnnac gctacccctt tctnggtctt ctnctacctt tcangtttta 120

aaagtntaaa gatggnagag acattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgagaagct ctgcgaccaa atctccgatg tgtcctcgac gcttgcctcg agcaggaccc 240

agacagcaaa gttgcctgcg aaacatgcac caaaaccaat tggnnaggtc ttcggagaat 300

caggacaagg ccaaggtgan t 321

<210> 2409
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2409

ngcacgcgta cgtaagctcg gaattcggct cgaggcagac ttaacaacag cacaaagcgg 60

gntactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccagaag 120

ttaaaatggc ccaagaaact ttcctattca catctgaatc agtgaacgag gggcaccctg 180

acaagctctg tgaccagatc tccgatgctg tgctcgatnc atgcttggag caaggccctg 240

ac 242

<210> 2410
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2410

catgcacgcg tacgtnagct cggaattcgg ctcgaggggt tactgtctgt tcaagctacc 60

atctctctct ctctttctta gtgcctcctt gccagaagta aaatggccca agaaactttc 120

ctattcacat ctgaatcagt gaacgagggg caccctgaca agctctgtga ccagatctcc 180

gatgctgtgc tcgatgcatg cttggagcag gacctgaaag naaggttcct gtnaanttgc 240

acaancccaa tgggggggnnt tttgggnagn ncccacagng gggggggn 289

<210> 2411
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2411

cagtcgcang cacgcgtacg taagctcgga attcggctcg agcaacagca caaagcgggt 60

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aaganacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

aagctctgtg accagatctc cgatgctgtg ctcgatgcat gcttggagca ggaccctga 239

<210> 2412
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2412

catgcacgcg tacgtnanct cggnattcgg ctcgagcatt tgggagttag gttctgcacg 60

ctctgcttcc agcgagtgtt ctttcttcgt ttcaacacct taatttgcac acgctgcttc 120

ttcagcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg taaacgaggg 180

tcaccccgac aagctgtgcg accagatctc tgatgcagtg ctcgatgcgt gccttgaaca 240

ggaccctga 249

<210> 2413

<211> 121
<212> nucleic acid
<213> Glycine max

<400> 2413

tgtggcaagt ggactagcca gaaggtgcat tgtgcaagtg tcttatgcca ttggtgtgcc 60

cgagcctttg tctgtctttg ttgacaccta tggcaccggg aagatccatg ataaggagat 120

t 121

<210> 2414
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2414

tctnatgcac gcgtacgtaa gctcggaatt cggctcgagg ccatttggga gttaggttct 60

gcacgctctg cttccagcga gtgttctttc ttcgtttcaa caccttaatt tgcacacgct 120

gcttcttcag cttgagaaat ggcacaagaa acctttctat tcacactgaa tctgtaaacg 180

agggtcaccc cgacaagctg tgcgaccaga tctctgatgc agtgctcgat gcgtgccttg 240

aacaggaccc tgacagcaag gttgcctgtg aga 273

<210> 2415
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2415

gcangcacgc gtacgtaagc tcggaattcg gctcgaggca aaggagtgat ttggagtttg 60

gagcgactga actaatcatt aatttgcact cgctgtttca gcttcatcac ccttgctttt 120

gcatcattta tatctcttga gaaatggcac aagaaacctt tctattcaca tctgaatctg 180

taaacnaggg tnaccccgac angcnntncg anccagatct ctgatgcagt acttgatgcg 240

tgccttgaac aggnccctga cngcaaggtt ccctgnnaga catgcaccag ggccnaacag 300

ggtaagggnc ttgg 314

<210> 2416
<211> 295
<212> nucleic acid

<213> Glycine max

<400> 2416

cgtcgcangc acgcgtacgt nagctcggnn ttcggctcga nctcgagccg aatcggctcg 60

agtgaggcca ggcaagcccc actcaancac cacacttctc ctcnttcacg ctacccettt 120

actnctcttc ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt 180

tacctcagag tcggtgaacg agggacaccc tganaagctc tgcgaccana tctccgatgc 240

tgtcctcgac gttgcctcga gcaggaccca gacagcaaag ttgcctgcga aacat 295

<210> 2417
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2417

ggccaggcna gccccactca accaccacac ntctncctcg ttcacgctac ccctttctgn 60

ctcttcttct acctttcatg ttttaaaagt ataaagatgg cagagacatt cctatttacc 120

tcagagtcgg tgaacgaggg acancctgac aagctctgcg accaaatctc cgatgctgtc 180

ctcgacgctt gcncgagcag gacccagaca gcaaagttgc ctgngaaaca tgcnacaaaa 240

accaanttgg 250

<210> 2418
<211> 206
<212> nucleic acid
<213> Glycine max

<400> 2418

attaacttgg accttaagag ggtggtcat aggttcctca agacagctgc ttanggacac 60

tttggaaggg atgatgcaga cttcacctgg gaagttgtga agccactcaa gtcagagaag 120

cctcaagctt aagagtgttg ttaagttaat cactcccttc agtggatgtc ttgctgggtg 180

tggatgaata atttgcgtgt ttcatg 206

<210> 2419
<211> 152
<212> nucleic acid
<213> Glycine max

<400> 2419

nttcgcangc acgcgtacgt aagctcggaa ttcngctcga ggaaactttc ctattcacat 60

ctgaatcagt gaacgagggg caccctgaca agctctgtga ccagatctcc gatgctgtgc 120

tcgatgcatg cttggannag gaccctgaca gt 152

<210> 2420
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 2420

gtctcntgca cgcgtacgta agctcggaat tcggntcgag gtttttgaag tatagagatg 60

gcagagncat tcctatttac ctcagantcn gtgaacgagg nacnccctgn cangctgctg 120

gtgaccaaat ctctgatgcn gtcctcgacg cttgcctcga acaggacnca nacancangg 180

ttgcctggng aancatgcac caaaaccaac ttggtccatg gtcttcggag aaatcacgac 240

caaggccnat gttgactacg agaagatagt gcgtgncacc tgcagagcnt cggctttgtn 300

ctcaaacgat gtgggatgg 319

<210> 2421
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2421

gcagacttaa caacagcaca aagcnggtta gtgtctgttc aagctaccat ctctctctct 60

gctttcttag tgcctccttg ccagaagtta aaatggccca agaaactttc ctattcacac 120

ctgaatcagt gnacgagggg caccctgaca agctctgtga ccagatctcc gatgctgtgc 180

tcgatgttgc ttggagcagg accctgacag caaggttgcn ngnaannnct gcaccangac 240

aagnnnggtt ttgttgncag ac 262

<210> 2422
<211> 231
<212> nucleic acid
<213> Glycine max

<400> 2422

gttgcacgcg tacgtaagct cggaattcgg ctcgaggcag acttaacaac agcacaaagc 60

gggttactgt ctgttcaagc taccatctct ctctctcttt cttagtgcct ccttgccaga 120

agttaaaatg gcncaagaaa ctttcctatt cacatctgaa tcagtgaacg aggggcaccc 180

tgacaagctc tgtgaccaga tctccgatgc tgtgctcgat gcatgcttgg a 231

<210> 2423
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2423

ctaatgcacg cgtacgtnag ctcggaattc ggctcgaggt gatttggagt ttggagcgac 60

tgaactaatc attaatttgc actcgctgtt tcagcttcat caccettctt ttgcatcatt 120

tatatctctt gagaaatggc acaagaaacc tttctattca catctgaatc tgtaaacgag 180

ggtcaccccg acangctgtn cnaccagatc tctgatgcag tacttgatgc gtgccttgan 240

caggaccc 248

<210> 2424
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2424

tcgcaggcac gcgtacgtaa gctcggaatt cggctcgagn cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc ctttcttagt gcctccttgc 120

cagaagttaa aatggcccaa gaaactttcc nattcacatc tgaatcagtg aacgaggggc 180

accctgaaca agctctgtga ccagatnctc cgatggctgt gctcgatgnc atgcttggag 240

caggaccctg acagcaaggt tgcctgtgaa acctgcacca ggaccaacat ggtgatggtt 300

ttcgagagat cacaaccaag gc 322

<210> 2425
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2425

tcgcangcac ncgtacgtna gctcggaatt cggctcgagn ngccaggcaa gccccactca 60

accaccacac ctctcctcgt tcacgctacc cctttctgct cttcttctac ctttcaagtt 120

ttaaaagtat aaagatggca gagacattcc tatttacctc agagtcggtg aacgagggac 180

accctgacaa gctctgcgac caaatctccg atgctgtcct cgacgcttgc ctcgagcagg 240

acccagaaca gcaaagttgc ctgcgaaact ggcaccaaca ccaattggtc atggtcntcg 300

gagaaatcnc gaccagg 317

<210> 2426
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2426

angcacgcgt acgtaagctc ggaattcggc tcgagcggct gcgagaagac gacagaaggg 60

ggcagcgctt gatttgaggc caggcaagcc ccacttcaac caccacacct ctcctcgttc 120

acgctacccc tttctgctct tcttctacct ttcaagtttt aaaagtataa agatggcaga 180

gacattccta tttacctcag agtcggtgaa cgagggacac cctgacaagc tctgcgacca 240

aatctccgat gctgtcctcg acgcttgcct cgagcaggac ccagaca 287

<210> 2427
<211> 347
<212> nucleic acid
<213> Glycine max

<400> 2427

cncccnnang tcgcatgcac gcgtacgtaa gctcggaatt cggctcgaga cggctgcnna 60

gaagacgaca gaagggggca gcgcttgatt tgaggccagg caagccccac tcaaccacca 120

cacctctcct cgttcacgct acccctttct gctcttcttc tacctttcaa gttttaaaag 180

tataaagatg gcagagacat tcctatttac ctcagagtcg gtgaacgagg gacaccctga 240

caagctctgc gaccaaatct ccgatgctgt cctcgacgct tgcctcgagc aggacccaga 300

cagcaaattg cctgcgaaac atgcaacaaa aacaanttgt canggnc 347

<210> 2428
<211> 288
<212> nucleic acid

<213> Glycine max

<400> 2428

gntcangcac gcgtacgtaa gctcggaatt cngctcgagc annagcataa agcgggttac 60

tgtctgttca agctacncat ctctctctct cttncttagt gcctccttnc cagaagttan 120

natggcccaa gaaactttcc tattcacatc tgaatcagtg aancgagggg caccctgaca 180

agctctgtga ccagatctcc gatgctgtgc tcgatgcatg cttggagcag gangngacag 240

canggttgcc tgtgaaacct gcaccaagan caacatggtg atgntttt 288

<210> 2429
<211> 226
<212> nucleic acid
<213> Glycine max

<400> 2429

ctgcacncgt acgtnagctc ggcacncggc tccactnaac caccacacct cnccctcgtt 60

cacgctaccc ctttctgctc ttncttctac ctttccaagt tttaaaagtn taaagatggc 120

agagacattc ctatttacct cagagtcggt gaacgaggga caccctgaca agctctgcga 180

ccaaatctcc gatgctgtcc tcgacgcttg cctcgagcag gaccca 226

<210> 2430
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2430

gcacgcgtac gtaagctcgg aattcggctc gagtacggct cgagaagacg acagaagggg 60

gcagcgcttg atttgaggcc aggcaagccc cactcacacc accacacctc tcctcgttca 120

cgctacccct ttctgctctt cttctacctt tcaagtttta aaagtataaa gatggcagag 180

acattcctat ttacctcaga gtcggtgaac gagggacacc ctgacaagct ctgcgaccaa 240

atctccgatg ctgtcctcga cgcttgcctc gagcaggacc cagacag 287

<210> 2431
<211> 164
<212> nucleic acid
<213> Glycine max

<400> 2431

gcgtangtaa gctcggaatt cggctcgagg tcatatgttc ggctatgcna ctgacgagac 60

tcccgagctc atgcccttga gccatgtcct tgccacgaag ctcggtgcna agctcancga 120

ggttcggaan aacggganat gcccttggnt gannсctnnt ggca 164

<210> 2432
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2432

gtcgcangca cgcgtacgta agctcggaat tcggctcgag nccatttggg agttaggttc 60

tgcacgctct gcttccagcg agtgttcttt cttcgtttca acaccttaat ttgcacacgc 120

tgcttcttca gcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa 180

cgagggtcac cccgacaagc nnncgaccag atngcnnang cagtgcgcga ngngngncnt 240

nnacaggacc cngncagcaa ggcngnctgn nagacangca ncaagaccaa ca 292

<210> 2433
<211> 97
<212> nucleic acid
<213> Glycine max

<400> 2433

ccaagaccaa catggtcatg gtctctggag anctcacaac caaggccacc gtagactang 60

agaagattgt ccgtgacaca tgccgcgaaa ntggata 97

<210> 2434
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2434

catgcacgcg tacgtaagct cggaattcgg ctcgagtacg gctgcgagaa gacgacagaa 60

gggggcaccg cttgagcaga cttaacaaca gcacaaagcg ggttactgtc tgttcaagct 120

accatctctc tctctctttc ntagtgctcc ttgccagaag ttaaaaatgg cccaagaaac 180

tttcttattc acatctgaat cagtgaacga ggggcacctg acaagctctg tgaccagatc 240

tccgatgctg tgctcgatgc atgcttggag caggacctga cagcaaggtt gctgtgaaac 300

ctgcaccaan 310

<210> 2435
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2435

nagtcgcang cacgcgtacg taagctcgga attcggctcg agacggctgc nagaagacga 60

cagaaggggg cagcgcttga tttgaggcca ggcaagcccc actcaaccac cacacctctc 120

ctcgtncacg ctaccccttt ctgctcttct tctacctttc aagttttaaa agtataaaga 180

tggcagagac attcctattt acctcagagt cggtgaacga gggacaccct gacaagctct 240

gcgaccaaat ctccgatgct gtcctncgac gcttgcctcg ancaggaccc agacagcaaa 300

gttgcc 306

<210> 2436
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2436

actncgcatg cacgcgtacg taagctcgga attcggctcg agttgaggcc aggcaagccc 60

cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt 120

caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg 180

agggacaccc tgacaagctc tgcgaccaaa tctccgatgc tgtcctcgac gcttgcctcg 240

anggcccaga cagcaagntt gcctgcgaaa catncnnc 278

<210> 2437
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2437

gcacgcgtac gtaagctcgg aattcggctc gagatttctt cccatccttt cttccttcac 60

cactttgaac ttgaacttag ttgggggact tggctgagtt agactgtnat gtttaaattg 120

tagtcatggt ggtgtttttg gctgtgaatt tgctcatatg tgctaattat gtgttcttgt 180

ttgatgttac tctacagaag ttaaaatggc ccaagaaact ttcctattca catctgaatc 240

agtgaacgag gggcaccctg aacaagctct gtgaccagat ctccgatgct gtgctcgatg 300

catgcttgga gcagg 315

<210> 2438
<211> 121
<212> nucleic acid
<213> Glycine max

<400> 2438

attaacttgg accttaagag gggtggtcat aggttcctca agacagctgc tnatggacac 60

tttggaaggg atgatgcaga cttcacctgg gaagttgtga agccactcaa gtcagagang 120

c 121

<210> 2439
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2439

gtcgcacgca cgcgtacgta agctcggaat tcggctcgag caggcaagcc ccactcaacc 60

accacacctc tcctcgttca cgctacccct ttctgctctt cttctacctt tcaagtttta 120

aaagtataaa gatggcagag anattcctat ttacctcaga gtcggtgaac gagggacacc 180

ctgacaagct ctgcgancca aatctccgat gctgtcctcg acgcttgcct cgagcaggnc 240

ccagacagcc aaagttgcct gcgaaacang cagcnaaacc aacttggtc 289

<210> 2440
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2440

cntcangnac gcgtacgtaa gctcggaatt cgggctcgag nttgaggcca ggcaagcccc 60

actcaaccac cacacctctc ctcgttcacg ctacccettt ctgctcttct tctacctttc 120

aagttttaaa agtataaaga tggcagagac attcctattt acctcagagt cggtgaacga 180

gggacaccct gacaagctct ggggaccaaa tctccgatgc tgtcctcgac gcttgccntn 240

gagcaggacc cnganagcaa antngcttgg gaaanttgcn caaaaaccat ttgggtnngg 300

gtntgngnaa 310

<210> 2441
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2441

angcacgngt acgtnagctc ggaattcggc tcgagcttaa caacagcaca aagcgggtta 60

ctgtctgttc aagctaccat atctctctct ctnttcttag tgcctncctt gccanaagtt 120

aaaatggncc ntgaaacttt ccnattcaca tntnnatcag tgaacgaggg gcacccccgac 180

aagctctntn atagatcngg gtngncagtg ctagatgnat gnttggagca nganccctnan 240

agcnaggntn cctgtgaaac cnggcaccna gaccaacatg gtn 283

<210> 2442
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 2442

tgaggccagg caagccccac tcaaccacca canatnantc ctcgttncac gctacccctt 60

tctncctctt cttctacctt tcangtttta anagtataaa gatggcagag acattcctat 120

ttacctcaga gtcggtgaag agggacaccc tgacaagctc tgcgaccaaa tctccgatgc 180

tgtcctcgac gcttgcctcg agcaggaccc agacagcaaa gttgntggaa acatgcacca 240

<210> 2443
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2443

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagg gtttttgaag actgctgcct 60

atggacactt tggaagagaa gaccctgact tcacatggga agtggtcaaa cccctcaagt 120

gggagaaggc ctaagtaant cattccactg ctctatgctg gaagtttttt gagcgttgcc 180

cttataatat gtctaatatc cataactttc cacgtctctt acnctgtgtg tttctctcct 240

cttcctccta ttttgttatt tgtatgttct tttgtaattt ttacgtgatc aactaa 296

<210> 2444
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2444

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ngtggccata ggttcctcaa 60

gacagctgct tatggacact ttggaaggga tgaccctgac ttcacctggg aagttgtgaa 120

gccactcaag tctgagaagc ctcaagctta agattgttgt gaagttaatc actcccttca 180

atggatgtct tgctaggtgt ggatgaataa tttgcgtgtt ccatgactac tactacttca 240

ttcataggtc taatgtcatc tcatcaatac ttaaactgtt ttttttt 287

<210> 2445
<211> 185
<212> nucleic acid
<213> Glycine max

<400> 2445

agcagactta acaacagcac aaagcgggtt actgtctgtt caagctacca nnnnnnnnnn 60

nnnnnnntag tgcctccttg ccagaagtta aaatggccca agaaactttc ctattcacat 120

ctgaatcagt gaacgagggg caccctgaca agctctgtga ccagatctcc gatgctgtgc 180

tcgat 185

<210> 2446
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2446

ngtcnatgca cgcgtacgta agctcggaat tcggctcgag gttnggttct gcacgctctg 60

cttccagcga gtgttctttc ttcgtttcaa caccttanat ttgcacacgc tgcttcttca 120

gcttgagaaa tggcacaaga aacctttcta ttcacatctg aatctgtaaa cgagggtcac 180

cccgacaagc tgtgcgacca gatctctgat gcagtgctcg atgcgtg 227

<210> 2447
<211> 98
<212> nucleic acid
<213> Glycine max

<400> 2447

cctttttcagg gaaggaccct accaaggttg acagaagtgg tgcctatatt gtaaggcagg 60

ctgcaaagag tgtcgtggca aatggccttg ctagaagg 98

<210> 2448
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2448

gtcgcngcac gcgtacgtna gctcggaatt nggctcgagc tcgagccgca acagcacaaa 60

gcgggttact gtctgttcaa gctaccatct ctctctcact ttcttngtgc ctccttgcca 120

gangttanna tggcccaaga aactttccta ttcacatctg aatcagtgaa cgaggggcac 180

ncnnnacaag ctctgtgacc agatctccga tgctgtgcta cgatgcatgc ttggagcang 240

naccctgaca gcnaagttgc ctgtgaaacc tggcaccaag ancaacatgg tgatggtttt 300

cgga 304

<210> 2449
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2449

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtgatttgga gtttggagcg 60

actgaactaa tcnttanttt gcactcgctg tttcagcttc atcacccttc ttttgcatca 120

tttatatctc ttgagaaatg gcacaagaaa cctttctatt cacatctgaa tctgtaaacg 180

agggtcaccc cgacangctg tgcgaccaga tctctgatgc agtacttgnn gcgngcctna 240

aaggncccca ncancaaggt cgcctg 266

<210> 2450
<211> 159
<212> nucleic acid

<213> Glycine max

<400> 2450

tcggaattcg gctcgagaac agcacaaagc gggttactgt ctgttcaagc taccatctct 60

ctctctcttt cttagtgcct ccttgccaga agttaaaatg gcccaagaaa ctttcctatt 120

cacatctgaa tcagtgaacg aggggcaccc tgacaagct 159

<210> 2451
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2451

gtcgcangcn ngcgtnacgn nnagctcggn attcggctcg agccaagccc cactcaacca 60

ccanaccact ctctctgctc ttcttctacc tttccaagtt tntaaagtat taagntggca 120

gagacantcc nanntanctc agagncngng nangngggnc ancctgncan gcgctncgac 180

naatctncga tgtgtcctcg acgcttgcct tgaacaggac ccagacagca aggttgcctg 240

cgaaacatgc accaaganca attggtcatg gtcttcggag agatcacca 289

<210> 2452
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2452

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag ctcgagccgc tccacccaac 60

acgacgagac tgtcaccaat gangaaattg ntgntgacct tcaaanagca tgtgatcaan 120

cctgngatnc cngngaantn nctnatnagn agnncanttt ccnattngaa ccnttaaggc 180

ggtttggcaa tggttggccn nnaggggcna ngctgggtct ccggggncga aaagancttt 240

atncggatat ttagngngna nggggtgccc atgggggtgg tgnttcnccg ggan 294

<210> 2453
<211> 181
<212> nucleic acid
<213> Glycine max

<400> 2453

gnngctgcac gcgtacgtna gctcggaatt cggctcgagt aacaacagca caaagcgggt 60

tactgtctgt tcaagctacc atctctctct ctctttctta gtgcctcctt gccagaagtt 120

aaaatggccc aagaaacttt cctattcaca tctgaatcag tgaacgaggg gcaccctgac 180

a 181

<210> 2454
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2454

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag tgggagttag gttctgncac 60

gctctgcttc cagcgagtgt tctttcttcg tttcaacacc ttaatttgca cacgctgctt 120

cttcagcttg aggaatggca caagaaacct ttctnttcac atctgantct gtanacgang 180

gtcaccccga caagntgtgc gaaccagatn ctctgatggc agtgctcatg cgtgcgctga 240

ncaggaccct gacagcaagg ttgcctgn 268

<210> 2455
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2455

cntcgcangc acgcgtacgt gagctcggaa ttcggctcga gcaggcaaan cccacncaac 60

cgncanangg aaaaaacgaa ngcgcnaccc cattcngctc ntcttcnacc tnncangann 120

naagagnnta aagatggcag agacattcct atttacctca gagtacggtg aacgagggac 180

accctgacaa gctctgcgan ccaagtctcc gatgctgtcc tcgncgcttg cctcgagcag 240

gacccagaca gcaaagttgc gcagcganac atgcancaag ncgnattggn ccatggtt 298

<210> 2456
<211> 154
<212> nucleic acid
<213> Glycine max

<400> 2456

caccancagc aaacaannaa naagtcgcat gcacgcgtac gtaagctcgg aattcngctc 60

gaggggaaga cccaagtgac cgttgagtat tacaatgaca atggtgccag ggttcctatt 120

ccgtgtacac accgtgctaa tttccacaca acat 154

<210> 2457
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2457

cgtcgcangc acgcgtacgt aagctcggna ttcggctcga gcacaaagcg ggttactgtc 60

tgttcaagct accatctctc tctctctttc ttagtgcctc cttgccagaa gttaaaatgg 120

cccaagaaac tttcctattc acatctgaat cagtgaacga ggggcaccct gacaagctca 180

gagaccagaa nancgangcn gngcacgacg caagtccttg agcaggaccc agtacagcaa 240

ggnnnncagt gnaaccngta ccaagaccaa caggtgatgg tcct 284

<210> 2458
<211> 213
<212> nucleic acid
<213> Glycine max

<400> 2458

gtcncangca cacgtacgta agctcggaat tcnnctcgag ncaagcccca ctcaaccacc 60

acacctctcc tcgttcacgc taccccttc tgctcttctt ctanctttca agttttaaaa 120

gtataaagat ggcagagaca ttcctattta cctcagagtc ggtgaacgag ggacaccctg 180

acaagctctg cgaccaacan ctccgatgct gtc 213

<210> 2459
<211> 217
<212> nucleic acid
<213> Glycine max

<400> 2459

gtngcatgca cgcgtacgtn agctcggaat tcggctcgag caacagcaca aagcgggtta 60

ctgtctgttc aagctaccnt ctntctctct ctttcttagt gcctccttgc cagaagttaa 120

aatggnccaa gaaactttcc tattcacatc tgnatcagtg ancgangggc accctgacaa 180

gctctgtgac cagatctccg atgctgtgct cgntgca 217

<210> 2460
<211> 233
<212> nucleic acid
<213> Glycine max

<400> 2460

ctangcacgc gtacgtnagc tcggaattcg gctcgagcag caaaggagtg atttggagtt 60

tggagcgact gaactaatca ttaatttgca cttcgctgtt tcagcttcat caccccttctt 120

ttgcatcatt tatatctctt gagaaatggc acaagaaacc tttctattca catctgaatc 180

tgtaaacgag ggtcaccccg acangctgtg cgaccagatc tctgangnag nat 233

<210> 2461
<211> 202
<212> nucleic acid
<213> Glycine max

<400> 2461

gncgcangca cgcgtacgta agctcggaat tcggctcgag gggcaagccc cactcaacca 60

ccacacctct cctcgttcac gctacccctt tctgctcttc ttctaccttt caagttttaa 120

aagtataaag atggcagaga cattcctatt tacctcagag tcggtgaacg agggacaccc 180

tgacaagctc tgcgaccaaa tt 202

<210> 2462
<211> 196
<212> nucleic acid
<213> Glycine max

<400> 2462

nccnnacgtc gcntgcacgc gtacgtaagc tcggaattcg gctcgaggca gacttaacaa 60

cagcacaaag cgggttactg tctgttcaag ctaccatnct ctctctctct ttacttagtg 120

cctccttgcc agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga 180

acgaggggca ccctga 196

<210> 2463
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2463

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ttaacaacag cacaaagcgg 60

gttactgtct gttcaagcta ccatctctct ctctctttct tagtgcctcc ttgccaggtg 120

ctgccactct ctctttctct ctcttcatcc ttctgttggg ttggttgtgg agtgttgttt 180

tctgttgtgc acgtgttgtc attttttacc ctcgccacag atctgaagtg ttcaagtttg 240

gattttgtgc ttctggaagt taaaatggcc caagaaactt tcctattcac atctgaatca 300

gtgaacgagg ggcaccctga caa 323

<210> 2464
<211> 132
<212> nucleic acid
<213> Glycine max

<400> 2464

gcatgcacgc gtacgtaagc tcggaattcg gctcgagcag atggcaagac acaagtaact 60

gttgagtaac tacaatgaca atggtgccat ggttccagtt cgtgtccaca ctgtcctaat 120

ttcccacaca ac 132

<210> 2465
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2465

gggagttagg ttctgcacgc nctgngncca gcgagtgtgc tntcttcgtg tcaacacctg 60

aatttgcann acgctgcgnc tgcagcttga gaaatggcac aagaaaccnn gctatncana 120

tctgaatcgg taaacgaggg tcacnncgac aagctgtggg accagatctc tgatgcagtg 180

ctcgatgcg 189

<210> 2466
<211> 138
<212> nucleic acid
<213> Glycine max

<400> 2466

tngcacgcgt acgtaagctc ggnattcggc tcgagggagn ttggtgntgg tgaccaaggt 60

catatgttcg gctatgccna ctgacgagnn ctcccgagct catgcccttg agccatgtnc 120

cttgccacga agcttcgg 138

<210> 2467
<211> 341
<212> nucleic acid
<213> Glycine max

<400> 2467

ncctctnanc ntttacatcg anacnacgta cgtnagctcg gnattcggct cgagcagact 60

taacaacagc acaaagcggg ttactgtctg ttcaagctac catctctctc tctctttctt 120

agtgccctcc ttgccaggtg ctgccactct ctctttctct ctcttcatcc ttctgttggg 180

ttggttgtgg agtgttgttt tctgttgtgc acgtgttgtc attttttacc ctcgccacag 240

atctgaagtg ttcaagtttg gattttgtgc ttctggaagt taaaatggcc caagaaactt 300

tcctattcac atctgaatca gtgaacgagg ggcaccctga c 341

<210> 2468
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2468

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag aatgacacca cctacccct 60

tctccctata aatggcaact caatgccccc cttagaactc gcagcgcttg atttgaggcc 120

aggcaagccc cactcaacca ccacacctct cctcgttcac gctacccctt tctgctcttc 180

ttctaccttt caagttttaa aagtataaag atggcagaga cattcctatt tacctcagag 240

tcggtgaacg agggacaccc tgacaagctc tgc 273

<210> 2469
<211> 181
<212> nucleic acid
<213> Glycine max

<400> 2469

ggcgcacnca gnnttcggct cgagggccag gcaagcccca ctcaaccacc acacctctcc 60

tcgttcacgc taccccttttc tgctcttctt ctacctttca agttttaaaa gtataaagat 120

ggcagagaca ttcctattta cctcagagtc ggtgaacgag ggacaccctg acaagctctg 180

c 181

<210> 2470
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2470

gtcgcatgca cgcgtacgta agctcggaat tcggctcgan gnagacttaa cancagnnca 60

aagcgggtta ctgtctgntc angctaccat ctctcnctct ntttcttagt gcctccntgc 120

cagnagttnn aatggcccaa gnnactttcn tantcacatc tgantcnntg aacgaggggc 180

acccngataa gctctgtgan cagatctccg atgctgtgct ccgatgnatg cttggagcng 240

gnnnctgnca gcnaggntgn ctgtgnaacn tgcacnangn ncancatggt gatggntttc 300

ggnga 305

<210> 2471
<211> 199
<212> nucleic acid
<213> Glycine max

<400> 2471

agtcgangca ncgtacgtaa gctcggaatt cggctcgagg cagacttaac aacagcacaa 60

agcgggttac tgtctgttca agctaccatc tctctctctc tttcttagtg cctccttgcc 120

agaagttaaa atggcccaag aaactttcct attcacatct gaatcagtga acgaggggca 180

ccctgacaag ctctgtgat 199

<210> 2472
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2472

cgcatgcacg cgtacgtaag ctcggaattc ggctcgagcc ttgatctcaa gaggggtgga 60

aatggcaggt tcttgaagac tgctgcatat ggacactttg gcagagatga ccctgacttc 120

acatgggaag tggtgaagcc actcaagggg gagaaggtac ctgcttaact aaaaggggtt 180

ccaacactct tggcaaggga cttttgcact actactggct tcttattatc tgattgctaa 240

aattttctct atgtttcctt ccctcntact caattctgtt ttttttttnc ngtatttttt 300

tatgaatttc cccctttttt ttgtgta 327

<210> 2473
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2473

ggggtggaaa tggcaggttc ttgaagactg cngcatatgg acactttggc agagatgacc 60

ctgacttcac atgggaagtg gtgaagccac tcaaggggga gaaggtacct gcttaactaa 120

aaggggttcc aacactcttg gcaagggact tttgcactac tactggcttc ttattatctg 180

attgcnaaaa tttnctctat gnntccttcc ctcttactca attctgtttt tntttttctg 240

tatttttnat gaattc 256

<210> 2474
<211> 214
<212> nucleic acid
<213> Glycine max

<400> 2474

atggcaggtt cttgaagact gctgcatatg gacactttgg cagagatgac cctgacttca 60

catgggaagt ggtgaagcca ctcaaggggg agaaggtacc tgcttaacta aaaggggttc 120

caacactctt ggcaagggac ttttgcacta ctactggctt cttattatct gattgctaaa 180

attttctcta tgtttccttc cctcttactc aatc 214

<210> 2475
<211> 206
<212> nucleic acid
<213> Glycine max

<400> 2475

atggcaggtt cttgaagact gctgcatatg gacactttgg cagagatgac cctgacttca 60

catgggaagt ggtgaagcca ctcaaggggg agaaggtacc tgcttaacta aaaggggttc 120

caacactctt ggcaagggac ttttgcacta ctactggctt ctattatctg attgctaaaa 180

ttttctctat gtttccttcc ctctta 206

<210> 2476
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2476

cctccncaac agtcgcatgc acgcgtacgt aagtcggaat tcngctcgag ctgctgcata 60

tggacacttt ggcagagatg accctgactt cacatgggaa gtggtgaagc cacttcaagg 120

gggagaaggt acctgcttaa ctaaaagggg ttccaacact cttggcaagg gacttttgca 180

ctactactgg cttcttatta tctgattgct aaaatttctc ctatgtttcc tccctcttac 240

tcaattctgt tttttttnt ctgtnttttc tnatgaattt ccccctttt tttgggnact 300

ngnatgtgtt c 311

<210> 2477
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2477

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg catatggaca ctttggcaga 60

natgaccctg acttcacatg ggaagtggtg aagccacttc aaggggggaga aggtacctgc 120

ttaactaaaa ggggttccaa cactcttggc aagggacttt tgcactacta ctggcttctt 180

attatctgat tgctanaatt ttctctatgt ttccttccct cttactcaat tctnttttttc 240

nttttctgta tttntttatg aatttccccc tttttnttgn gnacttgtan gngtnctnnc 300

<210> 2478
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2478

acgtcgcatg cacgcgtacg taagctcggn attcggctcg agatttcgca tctnctcctt 60

ctcattccaa ctccaaaata cacacacacg atggaaacct tcctcttcac ctcagaatct 120

ncaaacgagg gccaccccga caagatctgt gaccaggttt ctgatgccat cctcgatgct 180

tgcttggagc aagacccaga gagcaaggtt gcctgcgaga cctgtacaaa aaccaacatg 240

gtcatggtct ttggggagat cacaaccaag gccaaggtga actacgagaa t 291

<210> 2479
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2479

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcggctgcga gaagacgaca 60

gaaggggttc ctcttcaatt tcgcatcttc tccttctcat tccaacttcc aaaatacaca 120

cacacgatgg aaaccttcct cttcacctca gaatctgtaa acgagggcca ccccgacaag 180

atctgtgacc aggtttctga tgccatcctc gatgcttgct tggagcaaga cccagagagc 240

aaggttgcct gcgagacctg tacaaaaacc aacatggtca tggtctttgg ggagatcaca 300

accaaggc 308

<210> 2480
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2480

cttctgtttc tggnttcatt ngggtgtttg gacacaattg ctnaattata ctttctgttg 60

attgtgttga cgcnggactg aatgaactaa tggagtctan aggtgggaaa nagaagtcnn 120

nnnnnnnnnn nnnnnaatca ttgttctacg aagctcccct cggatacagc atnngaagac 180

gttagaccaa acggtggaat caagaaattc agatctgctg cttactccaa cgtatatntt 240

cttctgatgc agtgattctg ta 262

<210> 2481
<211> 420
<212> nucleic acid
<213> Glycine max

<400> 2481

ggnggtnnng aatgatttag gtgncctagc caagacanat gacatcgcgt ncacgcntac 60

gtaagntcgg aattcggctc gagctcgagc cgcaaaaatt cgggaagact agtgactgtg 120

gttcacctag atcaactcta aagtgctgga atgaggaaga tgaggaagag tagtttcctt 180

aagtgtcttt attattctgt ccttgtgaaa ataagtctgg ttttccagat acgttattgt 240

ttttctttgt tgtctttttt agcttctgtt agagaccatt tgggcattta gacctttatt 300

gtttctatta ccatttgaac atcgaatgga ttaataaatc actttgtttg cgtgcaaaaa 360

aaannacana tctttcnana aanaaaaaaa annaaaaana acanaaaaan aaaaaaaaan 420

<210> 2482
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2482

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc nggaggatta ggcctccgag 60

cattgtccaa agaccaattg gacgagattc ttaaaccagc agagtgcact attgtngcat 120

cactttcaaa tgattatgtt gactcttatg ttctgtcaga gtcaagcctg ttcgtctatc 180

cttataaaat tatcatcaaa acttgtggga ctaccaaatt gcttctgtcc atccctgtcc 240

attctcaagt tgggctgatg ctcttgacat agctgtgaaa tctgtga 287

<210> 2483
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2483

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcgaaaaaa gacttgagat 60

atcatttttt gaaaatggtg tgtttgctga ccccggagga ttaggcctcc gagcattgtn 120

ccaaagacca attggacgag attcttaaac cagcagagtg cactattgtt gcatcacttt 180

caaatgatta tgttgactct tatgttctgt cagagtcaag cctgttcgtc tatcctataa 240

aattatcatc aaaacttgtg ggactaccaa attgcttctg tccatccc 288

<210> 2484
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2484

cgctcangca cgcgtacgta agctcggaat tcggctcgag ntctgatata tctgantttg 60

antttgaccc ntgcggatat tcaatgaatg gnntagaagg gagtgctata tccaccatcc 120

atgtcactcc tgaagatggg ttcagttacg caagttttga agctgttggt tatgacttta 180

atgacatggc tctaggtgaa nttgtggaaa ggantttagc ttgcttttgt ccagcagagt 240

tttctgttgc tttgcacatt gacatgcatg gtgagaaact aanaaatttc ccttaganat 300

caaagg 306

<210> 2485
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2485

gtctatgcac gcgtacgtaa gcnncggaat ncggctcgag gtctgatata tctgattttg 60

aatttgaccc ttgcggatat tcaatgaatg gaatagaagg gagtgctata tccaccatcc 120

atgtcactcc tgaagatggt ttcagttacg caagttttga agctgttggt tatgacttta 180

atgacatggc tctaggtgaa cttgtggaaa ggattttagc tgcttttgtc cagcagagtt 240

ttctgttgct tgcacatgac atgcagnctg agaaantaat aaattcccta gacatcaaag 300

gatactactg tggt 314

<210> 2486
<211> 476
<212> nucleic acid
<213> Glycine max

<400> 2486

aactccnctc cgntcgnncg tgnnntngta cagaagtccc ggctcgaccc acacgtcagc 60

tccttcaaac tccatctttc caaatcctct ctttgcgatt gtgttttgat ctgcttccta 120

ctgcgatagt ttctctactg ttacatggcc atggcggttt ccgcaattgg ttttgaaggt 180

ttcgagaaaa ggttggaaat atcctttttc cagccgggac tttttgctga ccctgaagga 240

aggggtctaa gggctcttac aaaatcccag ttgggtgaga ttctaacacc agctgcttgc 300

accattgttt cttcgctcaa aaacgataat gtcgactcct atgttctatc tgagtccagc 360

ctctttgttt atgcctacaa gatcatcatc aaaacctgtg gtactactaa gctattgctt 420

gcaatcccac ccatattgaa gttcgctgaa atgctttccc ntaatgttaa gtcngt 476

<210> 2487
<211> 510
<212> nucleic acid
<213> Glycine max

<400> 2487

gnngnaaggt tgntnagnaa cgggggtana tngaannnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnngt gcatgactgg 120

cctggataga gagaaagcac aggttttcta caaagaacaa tctgcttcag ctgccatgat 180

gactgttaat tccggcatta gaaaaattct tccagattcc gagatttgtg actttgactt 240

tgaaccatgt ggttattcaa tgaactctgt tgaaggcgct gctgtttcta cgattcatgt 300

taccccagaa gatggtttca gttatgcaag cttcgaaact gttggttatg acttcaaagc 360

ggtgaatctg aacgaaatgg gttcaagang gtattggcat gtttcctncc aactgagttt 420

ctgttgcagt caatgtggat ggtgcaagca agtcgtttga ccanacctgc ttctggatgt 480

taagggatac tgnctgaaaa gaggaacccc 510

<210> 2488
<211> 560
<212> nucleic acid
<213> Glycine max

<400> 2488

gnnnngnnnn nnntnnnaag taagtnaaan ctctntggaa agcncctacc ggtncggaat 60

tcccggcccg acccacgcgt ccggcttcag ctgccattat gactgttaat tctggcatta 120

gaaaaattct tccagantct gagatttgtg actttgactt tgagccatgt ggttattcaa 180

tgaactctgt tgaaggtgct gctgtttcta ccattcatgt taccccagaa gatggttnca 240

gttatgcaag ctttgagact gttgggnatg acttcaaagt ggtgaatctg aacgaaatgg 300

ttaagagggg attggcatgt tttctcccaa ctgagttctc tgttgcagtt catgtggatg 360

gtgcaagcaa gttgtttgat cagacgtgtn ttctggatgt taagggatac tgtcgcgaag 420

agaggagccc acgaaagggn ttgggaatgg gtggnnntct tggctaccaa aaaaantgcc 480

aaagacttgg gaactggggg tcaactagan ccaactctga aangntggaa aagaaggaag 540

atgaagaaag agtagttttt 560

<210> 2489
<211> 485
<212> nucleic acid
<213> Glycine max

<400> 2489

gngnnnnngn nnnnnnnnnn tnnnttnng tggcntanag cccnnnataa cancatcacg 60

tcgcangcat gannncgnaa ntcggctccg anggttattc aatgaactct gttgaaggtg 120

ctgctgtttc taccattcat gttaccccag aagatggttt cagttatgca agctttgaga 180

ctgttgggta tgacttcaaa gtggtgaatc tgaacgaaat ggttaagagg gtattggcat 240

gttttctccc aactgagttc tctgttgcag ttcatgtgga tggtgcaagc aagttgtttg 300

atcagacgtg ttttctggga tgttaaggga tactgtcgcg aagagaggag ccacgaaggg 360

cttggaatgg gtggttctct tgtctaccaa aaatttgcca agacttgtga ctgtggttca 420

nctanattaa ctcctgaaat gctgggaaag aaggaanatt aaanaanaat aattttcctt 480

aagtg 485

<210> 2490
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 2490

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ctgccatgat gactgttaat tccggcatta gaaaaattct tccagattcc gagatttgtg 120

actttgactt tgaaccatgt ggttattcaa tgaactctgt tgaaggcgct gctgtttcta 180

cgattcatgt taccccagaa gatggtttca gttatgcaag cttcgaaact gttggttatg 240

acttcaaagc ggtgaatctg aacgaaatgg ttcagagggt attggcatgt ttcctcccaa 300

ctgagttttc tgttgcagtt catgtggatg gtgcaagca 339

<210> 2491
<211> 412
<212> nucleic acid
<213> Glycine max

<400> 2491

gtttcagtta tgcaagcttt gagactgttg ggtatgactt caaagtggtg aatctgaacg 60

aaatggttaa gagggtattg gcatgttttc tcccaactga gttctctgtt gcagttcatg 120

tggatggtgc aagcaagttg tttgatcaga cgtgttttct ggatgttaag ggatactgtc 180

gcgaagagag gagccacgaa gggcttggaa tgggtggttc tcttgtctac caaaaatttg 240

ccaagacttg tgactgtggt tcacctagat caactctgaa gtgctggaaa gaggaagatg 300

aagaagagta gttttcttaa gtgtctttat tatgtccttg cgaaaataag tccggttttc 360

cagacagtga ttgtttntct ttggtgnttt ttncottnta tgttagacca tg 412

<210> 2492
<211> 504
<212> nucleic acid
<213> Glycine max

<400> 2492

agtgtntntg nnagggggga nnatggtaac actctcgaag actatgacgt cgcatgcacg 60

cgtacgtaag ctcggaattc ggctcgagtg catgcaacca tagttttatt aggatttttt 120

cttctttgtt ttcaattagg tttttttgtt gctctccttc aaactccatc tttccaaatc 180

ctctctttgc gattgtgttt tgatctgctt cctactgcga tagtttctct actgttacat 240

ggccatggcg gtttccgcaa ttggttttga aggtttcgag aaaaggttgg aaatatcctt 300

tttccagccg ggactttttg ctgaccctga aggaaggggt ctaagggctc ttacaaaatc 360

ccagttgggt gagattctaa caccagctgc ttgcaccatt gtttcttcgc tcaaaaacga 420

taatgtcgac tcctatgttc tatctgagtc cagcctcttt ggttatgcct acaagatcat 480

catcaaaacc tgngggacta ctaa 504

<210> 2493
<211> 347
<212> nucleic acid
<213> Glycine max

<400> 2493

tgcaattggt tttgaaggtt tcgagaagan gctggaaata tcctttttcc agcngggact 60

ttttgctgac cctgagggaa tgggtttaag agctcttgca nagtcccagt tggatgagat 120

acttacaccg gctgcttgca ccattgtttc atctctcaga aatgatcatg tcgactccta 180

tgttctgtct gagtccagtc tctttgttta tgcctacaag atcatcatca aaacctgtgg 240

tactacaaag ctactgcttg caatcccacc catattgaaa tttgctgaaa tgctttcctc 300

aatgtagatc tgtgnaatac accagggaag ttcanctttn ccggtgt 347

<210> 2494
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2494

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gccatggcgg tttctgcaat 60

tggttttgaa ggtttcgaga agangctgga aatatccttt ttccagccgg gactttttgc 120

tgaccctgag ggaatgggtt taagagctct tgcaaagtcc cagttggatg agatacttac 180

accggctgct tgcaccattg tttcatctcn cagaaatgat catgtcgact cctatgttct 240

gtctgagtcc agtctctttg tttatgccta caagatcatc atcaaaacct gtggtactac 300

aaagctactg cttg 314

<210> 2495
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2495

aangcacgcg tacgtaagct cggaattcgg ctcgagaaac aatctgcttc agctgccatt 60

atgactgtta attctggcat tagaaaaatt cttccagatt ctgagatttg tgactttgac 120

tttgagccat gtggttattc aatgaactct gttgaaggtg ctgctgtttc taccattcat 180

gttaccccag aagatggttt cagttatgca agctttgaga ctgttgggta tgacttcaaa 240

gtggtgaatc tgaacgaaat ggttaagagg gtattggcat gttttctccc aactgagttc 300

tctgttgcag ttca 314

<210> 2496
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2496

gtacgtanag ctcggaattc ggctcgagtg gcattagaaa aattcttcca gattctgaga 60

tttgtgactt tgactttgag ccatgtggtt attccaatga actctgttga aggtgctgct 120

gtttctacca ttcatgttac cccagaagat ggtttcagtt atgcaagctt tgagactgtt 180

gggtatgact caaagtggtg aatctgaacg aaatggttaa gagggtattg gcatgttttc 240

tcccaactga gttctctgtt gcagttcatg tggatggtgc aagcaagttg tttgatcaga 300

cgtgttttct ggatgttaag 320

<210> 2497
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2497

gtngcangca cgcgtacgta agctcggaat tcggctcgag gccatggcgg tttccgcaat 60

tggttttgaa ggtttcgaga aaaggttgga aatatccttt ttccagccgg gactttttgc 120

tgaccctgaa ggaaggggtc taagggctct tacaaaatcc cagttgggtg agattctaac 180

accagctgct tgcaccattg tttcttcgct caaaaacgat aatgtcgact cctatgttct 240

atctgagtcc agcctctttg tttatgccta caagatcatc atcaaaacct gtg 293

<210> 2498
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2498

nnntaanang tcgnangcac gcgtacgtaa gctcngaatt cggctcgagc ttcaaagtgg 60

tgaatctgaa cgaaatggtt aagagggtat tnncctgttt tctcccaact gagttctctg 120

ttgccgttca tgtgnatggt gcaagcaagt tgtttgatca gacgtgtttt ctggatgtta 180

agggatactg tcgcgaagag aggagccacg aagggcttgg aatgggtggt tctcttgtct 240

accaaaaatt tgccaagact tgtgactgtg gttcacctag atcaactctg aagtgctgga 300

aagaggaaga tgaagaagag tagtttt 327

<210> 2499

<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2499

tgtctgagtc cagtctcttt gtttatgcct acaagatcat catcaaaacc tgtggtacta 60

caaagctact gcttgcaatc ccacccatat tgaaatttgc tgaaatgctt tccctcaatg 120

ttagatctgt gaattacacc aggggaagtt tcatctttcc cggtgctcag ccctatcccc 180

atcgcaactt ttctgaggaa gttgctattc ttgatggcta ctttggcaag cttagtgcag 240

gaagcaatgc ttatattttg ggtggccaag acaaatcaca gaac 284

<210> 2500
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2500

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ntttccgcaa ttggttttga 60

aggtttcgag aaaaggttgg aaatatcctt tttccagccg ggactttttg ctgaccctga 120

aggaaggggt ctaagggctc ttacaaaatc ccagttgggt gagattctaa caccagctgc 180

ttgcaccatt gtntcttcgc tcaaaaacga taatgtcgac tcctatgttc tatctgagtc 240

cagcctcttt gtttatgcct acaagatcat catcaaaacc tgtggtacta ctaagctat 299

<210> 2501
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2501

aattggtttt gaaggtttcg agaaaaggtt ggaaatatcc tttttccagc cgggactttt 60

tgctgaccct gaaggaaggg gtctaagggc tcttacaaaa tcccagttgg gtgagattct 120

aacaccagct gcttgcacca ttgtttcttc gctcaaaaac gataatgtcg actcctatgt 180

tctatctgag tccagcctct ttgtttatgc ctacaagatc atcatcaaaa cctgtggtac 240

tactaagcta ttgctt 256

<210> 2502

<211>   315
<212>   nucleic acid
<213>   Glycine max

<400>   2502

ntcgcatgca cgcntacgta agctcggaat tcggctcgag tngcggtttc cgcaattggt   60

tttgaaggtt tcgagaaaag gttggaaata tccttttttcc agccgggact ttttgctgac   120

cctgaaggaa ggggtctaag ggctcttaca aaatcccagt tgggtgagat tctaacacca   180

gctgcttgca ccattgtttc ttcgctcaaa aacgataatg tcgactccta tgttctatct   240

gagtccagcc tctttgttta tgcctacaag atcatcatca aaacctgtgg taactactaa   300

gctattgctt gcaat   315

<210>   2503
<211>   312
<212>   nucleic acid
<213>   Glycine max

<400>   2503

cangcacgcg tacgtaagct cggaattcgg ctcgaggtta attctggcat tagaaaaatt   60

cttccagatt ctgagatttg tgactttgac tttgagccat gtggttattc aatgaactct   120

gttgaaggtg ctgctgtttc taccattcat gttaccccag aagatggttt cagttatgaa   180

gctttgagac tgttgggtat gacttcaaag tggtgaatct gaacgaaatg gttaagaggg   240

tattggcatg ttttctccca actgagttct ctgttgcagt tcatgtggat ggtgcaagca   300

agtngtttga tc   312

<210>   2504
<211>   440
<212>   nucleic acid
<213>   Glycine max

<400>   2504

ccacgcgtcc gccagattga tagttcattg catgcaacca tagttttatt aggtttttttc   60

ttctttgntt tcaattaggt ttttgctgct ctccttcaaa ctccgtcttt ccgaatcctc   120

tctttgtgat tgtgttctgt tctgcttcct accgcgatag tttctcttct gaagcatggc   180

catggcggtt tctgcaattg gttttgaagg tttcgagaag aggctggaaa tatcctttttt   240

ccagccggga ctttttgctg accctgaggg aatgggttta agagctcttg caaagtccca 300

gttggatgag atacttacac cggctgcttg caccattggt tcatctctca gaaatgatca 360

tgtcgactcc tatggtctgg ctgaagtcca gtctctttgg ttatgcctac aagatcatta 420

tcaaaacctg gggtactaca 440

<210> 2505
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2505

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggcggtttcc gcaattggtt 60

ttgaaggttt cgagaaaagg ttggaaatat cctttttcca gccgggactt tttgctgacc 120

ctgaaggaag ggtctaagg gctcttacaa aatcccagtt gggtgagatt ctaacaccag 180

ctgcttgcac cattgtttct tcgctcaaaa acgataatgt cgactcctat gttctatctg 240

agtccagcct ctttgtttat gcctacaaga tcatcatcaa aacctgt 287

<210> 2506
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2506

nngcatgcac ncgtacgtaa gctcggaatt cggctcgagg ctgtttctac gnttcatgtt 60

accccagaag atggtttcag ttatgcaagc ttcgaaactg ttggttatga cttcaaagcg 120

gtgaatctga acgaaatngt tcagagggta ttggcatgtt tcctcccaac tgagttttct 180

gttgcagttc atgtggatgg tgcaagcaag tcgtttgagc agacctgctt tctggatgtt 240

aagggatact gtcgtgaaga gaggagccac gaagggcttg gaatgggtgg ttctgttg 298

<210> 2507
<211> 505
<212> nucleic acid
<213> Glycine max

<400> 2507

ccacgcgtcc gcttgatggc tactttggca aacttggtgc aggaagcaat gcttatattt 60

tgggtggcca anacnaagca cagaactggc atgtctactc tgcttctgca gattctgtaa 120

ctcaatgtga caatgtttac actcttgaga tgtgcatgac tggcctggat agagagaaag 180

cacaggtttt ctacaaagaa caatctgctt cagctgccat gatgactgnt aattccggca 240

ttagaaaaat tcttccaaat tcccagaatt gngactttgn ntttgaacca tgtggntatt 300

caatgaactn tgnttgaaag gcncttgtgg ttctacgatt catggtancc ccagaagatg 360

ggtcanntat tgcaagcttt gnaaactntt gggtatgact ttaaagccgg ngaatntgaa 420

cccaaaaggn ttaaanggat ttggcatggt tcctccaact taantttctg tncaantcat 480

tggggaangt gcaagcaagn ntttt 505

<210> 2508
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2508

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ctttgaacca tgtggttatt 60

caatgaactc tgttgaaggc gctgntgttt ctacgattca tgttacccca gaagatggtt 120

tcagttatgc aagcttcgaa actgttggtt atgacttcaa agcggtgaat ctgaacgaaa 180

tggttcagag ggtattggca tgtttcctcc caactgagtt ttctgttgca gttcatgtgg 240

atggtgcaag caagtcgttt gagcagacct gctttctgga tgttaaggga tact 294

<210> 2509
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2509

agtcgcnngc acgcgtacgt aagctcggaa ttcggctcga ggttttctac aaagaacaat 60

ctgcttcagc tgccattatg actgttaatt ctggcattag aaaaattctt ccagattctg 120

agatttgtga ctttgacttt gagccatgtg gttattcaat gaactctgtt gaaggtgctg 180

ctgtttctac cattcatgtt accccagaag atggtttcag ttatgcaagc tttgagactg 240

ttgggtatga cttcaaagtg gtgaatctga acgaaatggt taagagggta ttggca 296

<210> 2510

<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2510

ggactttttg ctgaccctga aggaaggggt ctaagggctc ttacaaaatc ccagttgggt 60

gagattctaa caccagctgc ttgcaccatt gtttcttcgc tcaaaaacga taatgtcgac 120

tcctatgttc tatctgagtc cagcctcttt gtttatgcct acaagatcat catcaaaacc 180

tgtggtacta ctaagctatt gcttgcaatc ccacccatat tgaagttcgc tgaaatgctt 240

tcccttaatg ttaa 254

<210> 2511
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2511

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgaga ggcgctgctg tttctacgat 60

tcatgttacc ccagaagatg gtttcagtta tgcaagcttc gaaactgttg gttatgactt 120

caaagcggtg aatctgaacg aaatggttca gagggtattg gcatgtttcc tcccaactga 180

gttttctgtt gcagttcatg tggatggtgc aagcaagtcg tttgagcaga cctgctttct 240

ggatgttaag ggatactgtc gtgaagagag gagccacgaa gggcttggaa tgggtggtt 299

<210> 2512
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2512

gtcgactcct atgttctatc tgagtccagc ctctttgttt atgcctacaa gatcatcatc 60

aaaacctgtg gtactactaa gctattgctt gcaatccacc catattgaag ttcgctgaaa 120

tgctttccct taatgttaag tctgtgaatt acaccagggg aagtttcatt ttccccagtg 180

ctcagccata tccccatcgc aacttttctg aggaagttgc tattcttgat ggctactttg 240

gcaaacttgg tgcagga 257

<210> 2513

<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2513

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgagc tcgagccgct cctatgttct 60

atctgagtcc agcctctttg tttatnccta caagatcatc anccaaaacc tgtggtacta 120

ctaagctatt gcttgcaatc ccacccatat tgaagttcgc tgaaatgctt tcccttaatg 180

ttaagtctgt gaattacacc aggggaagtt tcattttccc cagtgctcag ccatatcccc 240

atcgcaactt ttctgaggaa gttgctattc ttgatggcta ctttggcaaa cttggtgcag 300

gaagcaatgc 310

<210> 2514
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2514

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc agagggtatt ggcatgtttc 60

ctcccaactg agttttctgt tgcagttcat gtggatggtg caagcaagtc gtttgagcag 120

acctgctttc tggatgttaa gggatactgt cgtgaagaga ggagccacga agggcttgga 180

atgggtggtt ctgttgtcta ccaaaaattc gggaagacta gtgactgtgg ttcacctaga 240

tcaactctaa agtgctggaa tgaggaagat gaggaagagt agtttcctta agtgtcttta 300

ttattctgtc cttgtgaaaa ta 322

<210> 2515
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2515

aannnngaan cgcangcncg cgnacgtnan ctcggaattn ngctcnaggt ctaaggnctc 60

ttacaaaatc ccagttgggt gagattctna caccagctgc ttgcaccatt gtttcttcgc 120

tcaaaaacga taatgtcgac tcctntgttc tatctgantc cagcctcttt gtntatgcct 180

acnagatcat catcaaaacc tgtggtacta ctaagctatt gcttgcnatc ccacccatat 240

tgaagttngc tganatgctt tcccttaatg ttaagtctgt gaattacacc aggggaagtt 300

tcattttccc cagt 314

<210> 2516
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2516

gatgcacgcg tacgtaagct cggaattcgg ctcgaggtga ctttgacttt gagccatgtg 60

gttattcaat gaactctgtt gaaggtgctg ctgtttctac cattcatgtt accccagaag 120

atggtttcag ttatgcaagc tttgagactg ttgggtatga cttcaaagtg gtgaatctga 180

acgaaatggt taagagggta ttggcatgtt ttctcccaac tgagttctct gttgcagttc 240

atgtggatgg tgcaagcaag ttgtttgatc agacgtgttt tct 283

<210> 2517
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2517

gtccagcctc tttgtttatg cctacaagat catcatcaaa acctgtggta ctactaagct 60

attgcttgca atcccaccca tattgaagtt cgctgaaatg ctttccctta atgttaagtc 120

tgtgaattac accaggggaa gtttcatttt ccccagtgct cagccatatc cccatcgcaa 180

cttttctgag gaagttgcta ttcttgatgg ctactttggc aaacttggtg caggaagcaa 240

tgcttat 247

<210> 2518
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 2518

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gccatatccc catcgcaact 60

tttctgagga agttgctatt cttgatggct actttggcaa acttggtgca ggaagcaatg 120

cttatatttt gggtggccaa gacaaagcac agaactggca tgtctactct gcttctgcag 180

attctgtaac tcaatgtgac aatgtttaca ctcttgagat gtgcatgact ggcctggata 240

gagagaaagc acaggttttc tacaaagaac aatctgcttc agctgccatg atgactgtta 300

attccggcat tagaaaaatt cttccagatt ccgaga 336

<210> 2519
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2519

agtcctatgc acgcgtacgt aagctcggaa ttcggctcga gatcaaaacc tgtggtacta 60

ctaagctatt gcttgcaatc ccacccatat tgaagttcgc tgaaatgctt tcccttaatg 120

ttaagtctgt gaattacacc aggggaagtt tcattttccc cagtgctcag ccatatcccc 180

atcgcaactt ttctgaggaa gttgctattc ttgatggcta ctttggcaaa cttggtgcag 240

gaagcaatgc ttatattttg ggtggccaag acaaagcaca gaactggcat gtctactctg 300

cttctg 306

<210> 2520
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2520

catgtcgact cctatgttct gtctgagtcc agtctctttg tttatgccta caagatcatc 60

atcaaaacct gtggtactac aaagctactg cttgcaatcc cacccatatt gaaatttgct 120

gaaatgtttc cctcaatgtt agatctgtga attacaccag gggaagtttc atctttcccg 180

gtgctcagcc ctatccccat cgcaactttt ctgaggaagt tgctattctt gatggctact 240

ttggcaa 247

<210> 2521
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2521

gtcncatgca cgcccaacgt aagctcggaa ttcggctcga ggtttacact cttgagatgt 60

gcatgactgg cctggataga gagaaagcac aggttttcta caaagaacaa tctgcttcag 120

ctgccatgat gactgttaat tccggcatta gaaaaattct tccagattcc gagatttgtg 180

actttgactt tgnaccatgt ggttattcaa tgaactctgt tgaaggcgct gctgtttcta 240

cgattcatgt taccccagaa gatggtttca gttatgcaag ct 282

<210> 2522
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2522

gcatgcacgc gtacgtaagc tcggaattcg gctcgagnaa aacctgtggt actactaagc 60

tattgcttgc aatcccaccc atattgaagt tcgctgaaat gctttccctt aatgttaagt 120

ctgtgaatta caccagggga agtttcattt tccccagtgc tcagccatat ccccatcgca 180

acttttntga ggaagttgct attcttgatg gctactttgg caaacttggt gcaggaagca 240

atgcttatat tttgggtggc caagacaaag cacagaactg gcatgtctac tctgcttctg 300

cagat 305

<210> 2523
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2523

cgtatgcacg cgtacgtaag ctcggaattc ggctcgagct cttctgaagc atggccatgg 60

cggtttctgc aattggtttt gaaggtttcg agaagaggct ggaaatatcc tttttccagc 120

cgggactttt tgctgaccct gagggaatgg gtttaagagc tcttgcaaag tcccagttgg 180

atgagatact tacaccggct gcttgcacca ttgtttcatc tctcagaaat gatcatgtcg 240

actcctatgt tctgtctgag tccagtctct tgtttatgcc tacaaga 287

<210> 2524
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2524

tcgcangcac gcgtacgtna gctcggaatt cggctcgagg gcattagaaa aattcttcca 60

gattctgaga tttgtgactt tgactttgag ccatgtggtt attcaatgaa ctctgttgaa 120

ggtgctgctg tttctaccat tcatgttacc ccagaagatg gtttcagtta tgcaagcttt 180

gagactgttg gncatgactt caaagtggtg aatctgaacg aaatggttaa gagggtattg 240

gcatgttttc tcccaactga gttcgtgttg cagttc 276

<210> 2525
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2525

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cccaactgag ttctctgttg 60

cagttcatgt ggatggtgca agcnagttgt ttgatcagac gtgttttctg gatgttaagg 120

gatactgtcg cgaagagagg agccacgaag ggcttggaat gggtggttct cttgtctacc 180

aaaaatttgc caagacttgt gactgtggtt cacctagatc aactctgaag tgntggaaag 240

aggaagatga agaagagtag ttttcttaag tgtctttatt atgtccttgc gaaaataagt 300

cc 302

<210> 2526
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2526

cangcacgcg tacgtaagct cggaattcgg ctcgagaaaa cgataatgtc gactcctatg 60

ttctatctga gtccagcctc tttgtttatg cctacaagat catcatcaaa acctgtggta 120

ctactaagct attgcttgca atcccaccca tattgaagtt cgctgaaatg ctttccctta 180

atgttaagtc tgtgaattac accaggggaa gtttcatttt ccccagtgct cagccatatc 240

cccatcgcaa cttttctgag gaagttgcta ttct 274

<210> 2527
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2527

ctgcaattgg ttttgaaggt ttcgagaagn ngctggaaat atccttttc cagccgggac 60

tttttgctga ccctgaggga atgggtttaa gagctcttgc aaagtcccag ttggatgaga 120

tacttacacc ggctgcttgc accatangtt tcatctctca gaaatgatca tgtcgactcc 180

tatgttctgt ctgagtncag tctctttgtt tatgcctaca agatcatcat caaaacctgt 240

ggtatacaaa gctactgttg cant 264

<210> 2528
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2528

ntgcacgcgt acgtaagctc ggaattcggc tcgaggctac tgcttgcaat cccacccata 60

ttgaaatttg ctgaaatgct ttccctcaat gttagatctg tgaattacac caggggaagt 120

ttcatctttc ccggtgctca gccctatccc catcgcaact tttctgagga agttgctatt 180

cttgatggct actttggcaa gcttagtgca ggaagcaatg cttatatttt gggtggccaa 240

gacaaatcac agaactggca tgtctactct gcttctgcag attctgtaa 289

<210> 2529
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2529

tcnnangcac gcgtacgtna gctcggaatt cggctcgagg cttgcaatcc cacccatatt 60

gaagttcgct gaaatgcttt cccttaatgt taagtctgtg aattacacca ggggaagttt 120

cattttcccc agtgctcagc catatcccca tcgcaacttt tctgaggaag ttgctattct 180

tgatggctac tttggcaaac ttggtgcagg aagcaatgct tatattttgg gtggccaaga 240

caaagcacag aactggcatg tctactctgc ttctgcagat tctgtaactc aatgtgacaa 300

tgtttacatc t 311

<210> 2530
<211> 308
<212> nucleic acid

<213> Glycine max

<400> 2530

ttntangcac gcgtacgtna gctcggaatt cggctcgagc aggaagcaat gcttatatnt 60

tgggtggcca agacaaatca cagaactggc atgtctactc tgcttctgca gattctgtaa 120

ctccatgcga caatgtttac actctagaga tgtgcatgac tggcctggat agagagaaag 180

cacaggtttt ctacaaagaa caatctgctt cagctgccat tatgactgtt aattctggca 240

ttagaaaaat tcttccagat tctgagattt gtgactttga ctttgagcca tgtggttatt 300

caatgaac 308

<210> 2531
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2531

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc aaagcacaga actggcatgt 60

ctactctgct tctgcagatt ctgtaactca atgtgacaat gtttacactc ttgagatgtg 120

catgactggc ctggatagag agaaagcaca ggttttctac aaagaacaat ctgcttcagc 180

tgccatgatg actgttaatt ccggcattag aaaaattctt ccagattccg agatttgtga 240

ctttgacttt gaaccatgtg gttattcaat gaactctgtt gaaggcgctg ct 292

<210> 2532
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2532

cnaangcacg cgtacgtaag ctcggaattc ggctcgaggc agattctgta actcaatgtg 60

acaatgttta cactcttgag atgtgcatga ctggcctgga tagagagaaa gcacaggttt 120

tctacaaaga acaatctgct tcagctgcca tgatgactgt taattccggc attagaaaaa 180

ttcttccaga ttccgagatt tgtgactttg actttgaacc atgtggttat tcaatgaact 240

ctgttgaagg cgctgctgtt tctacgattc atgttactcc agaag 285

<210> 2533

<211> 326
<212> nucleic acid
<213> Glycine max

<400> 2533

gatgcagcgt acgtnagctc ggaattcggc tcgagaatcc tctctttgcg attgtgtttt 60

gatctgcttc ctactgcgat agtttctcta ctgttacatg gccatggcgg tttccgcaat 120

tggttttgaa ggtttcgaga aaaggttgga aatatccttt ttccagccgg gactttttgc 180

tgaccctgaa ggaaggggtc taagggctct tacaaaatcc cagttgggtg agatctaaca 240

ccagctgctt gcaccattgt ttcttcgctc aaaaaacgat aatgtcgact cctatgttct 300

atctgagtcc agcctctttg tttatg 326

<210> 2534
<211> 502
<212> nucleic acid
<213> Glycine max

<400> 2534

ccacgcgtcc ggatagttcg ttgcatgcaa ccatagtttt attaggattt tttcttcttt 60

gntttcaatt aggttgtttt gntgctctcc ttcaaactcc atctttccaa atcctctctt 120

tgcgattgng ttttgatctg cttcctactg cgatagnttc tctactgnta catggccatg 180

gcggtttccg caattggttt tgaaggnttc gagaaaaggn tggaaatatc ctttttccaa 240

ccgggacttt ttgctgaccc tgaaagaagg ggtctaaang gctnttacaa aatccaagtg 300

ggtgagattc taacaccagc tgnttgnacc attggttctt ngctnaaaaa cgatnatgnc 360

cacttctatg gtctatctna gttcangctt tttgggtatg cctaccaaga tcattattna 420

aaactnnggg accacctaac tattggtttn aatccccant atttgaaatt gcttnaanng 480

ctttccctta aggttaaact gg 502

<210> 2535
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2535

nangtcgcan gcacgcgtac gtaagctcgg aattcggctc gaggctactg cttgcaatcc 60

cacccatatt gaaatttgct gaaatgcttt ccctcaatgt tagatctgtg aattacacca 120

ggggaagttt catctttccc ggtgctcagc cctatcncca tcgcaacttt tctgaggaag 180

ttgctattct tgatggctac tttggcaagc ttagtgcagg aagcaatgct tatattttgg 240

gtggccaaga caaatcacag aactggcatg tctactctgc ttctgcagat t 291

<210> 2536
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2536

gcangcacgc gtacgtaagc tcgggaattc ggctcgagng ccaagacaaa gcacagaact 60

gggcatgtct actctgcttc tgcagattct gtaactcaat gtgacaatgt ttacactctt 120

gagatgtgca tgactggcct ggatagagag aaagcacagg ttttctacaa agaacaatct 180

gcttcagctg ccatgatgac tgttaattcc ggcattagaa aaattcttcc agattccgag 240

atttgtgact ttgactttga accatgtggt tattcaatga actctgttga aggcgctgct 300

gtttctac 308

<210> 2537
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2537

acgtcgcang cacgcgtacg taagctcgng aattcggctc gagggcaagc ttagtgcagg 60

aagcaatgct tatattttgg gtggccaaga caaatcacag aactggcatg tctactctgc 120

ttctgcagat tctgtaactc catgcgacaa tgtttacact ctagagatgt gcatgactgg 180

cctggataga gagaaagcac aggttttcta caaagaacaa tctgcttcag ctgccattat 240

gactgttaat tctggcatta gaaaaattct tccagattct gagatttgtg actttgactt 300

tgagccat 308

<210> 2538
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2538

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtactacaaa gctactgctt 60

gcaatcccac ccatattgaa atttgctgaa atgctttccc tcaatgttag atctgtgaat 120

tacaccaggg gaagtttcat ctttcccggt gctcagccct atccccatcg caacttttct 180

gaggaagttg ctattcttga tggctacttt ggcaagctta gtgcaggaag caatgcttat 240

attttgggtg gccaagacaa atcacagaac tggcatgtct a 281

<210> 2539
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2539

antcgcatgc acgcgtacgt nagctcggaa ttcggctcga gattctggca ttagaaaaat 60

tcttccagat tctgagattt gtgactttga ctttgagcca tgtggttatt caatgaactc 120

tgttgaaggt gctgctgttt ctaccattca tgttacccca gaagatggtt tcagttatgc 180

aagctttgag actgttgggt atgacttcaa agtggtgaat ctgaacgaaa tggttaagag 240

ggtatgggca gttttcttcc caatgagttc tctgttgcag ttcagtggga ggtgcaaca 299

<210> 2540
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2540

ntgnncgcgt acgtnagctc ggaattnggc tcgagctcga gccgttcgag aagaggctgg 60

aaatatcctt tttccagcng gnacttttttg ctgaccctga ggncatgggt tnangagntc 120

ttgcaaagtc ccagttggat gagatantta nacncgctgc ttgcaccatt gtttcatctc 180

tcagaaatga tcatgncgan tcctatgtnc tgtctgagtc cagtntcttn gtntatgcct 240

acaagatcat catcaaaacc tgnggtacta caaagctact gctt 284

<210> 2541
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2541

gcgtacgtaa gctcggaatt cggctcgagn ttaggttttt ttgttgctct ccttcaaact 60

ccatctttcc aaatcctctc tttgcgattg tgttttgatc tgcttcctac tgcgatagtt 120

tctctactgt tacatggcca tggcggtttc cgcaattggt tttgaaggtt tcgagaaaag 180

gttggaaata tcctttttcc agccgggact ttttgctgac cctgaaggaa ggggtctaag 240

ggctcttaca aaatcccagt tgggtgagat tctaacacca gctgcttgca ccatgtt 297

<210> 2542
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2542

tcgnngcacg cgtacgtaag ctcggaattc ggctcgaggg ccaagacaaa tcacagaact 60

ggcatgtcta ctctgcttct gcagattctg taactccatg cgacaatgtt tacactctag 120

agatgtgcat gactggcctg gatagagaga aagcacaggt tttctacaaa gaacaatctg 180

cttcagctgc cattatgact gttaattctg gcattagaaa aattcttcca gattctgaga 240

tttgtgactt tgacttgagc catgtggtta ttcaatgaac tctgttgaag gtgctgct 298

<210> 2543
<211> 390
<212> nucleic acid
<213> Glycine max

<400> 2543

ttcctgatat ccatccagat tgatagttca ttgcatgcaa ccatagtttt attaggtttt 60

ttcttctttg ttttcaatta ggtttttgct gctctccttc aaactccgtc tttccgaatc 120

ctctctttgt gattgtgttc tgttctgctt cctaccgcga tagtttctct tctgaagcat 180

ggccatggcg gtttctgcaa ttggttttga aggtttcgag aagaggctgg aaatatcctt 240

tttccagccg ggactttttg ctgaccctga gggaatgggt ttaagagctc ttgcaaagtc 300

ccagttggat gagatactta caccggctgc ttgcaccatt ggttcatctc tcagaaatga 360

tcatgtcgac ttctaaggtc tggctgaanc 390

<210> 2544

<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2544

nncngcacgc nnacgtaagc tcggaattcg gctcgagggg aagtttcatt ttccccagtg 60

ctcagccata tccccatcgc aacttttctg aggaagttgc tattcttgat ggctactttg 120

gcaaacttgg tgcaggaagc aatgcttata ttttgggtgg ccaagacaaa gcacagaact 180

ggcatgtcta ctctgcttct gcagattctg taactcaatg tgacaatgtt tacactcttg 240

agatgtgcat gactggcctg gatagagaga aagcacaggt tttc 284

<210> 2545
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2545

gtcgcnngca cgcgtacgta agctcggaat tcggctcgag ctcagccata tccccatcgc 60

aacttttctg aggaagttgc tattcttgat ggctactttg gcaaacttgg tgcaggaagc 120

aatgcttata ttttgggtgg ccaagacaaa gcacagaact ggcatgtnta ctctgcttct 180

gcagattctg taactcaatg tgacaatgtt tacactcttg agatgtgcat gactggcctg 240

gatagagaga aagcacaggt tttctacaaa gaacaatctg cttcagctgc catga 295

<210> 2546
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2546

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gtgctcagcc atatccccat 60

cgcaactttt ctgaggaagt tgctattctt gatggctact ttggcaaact tggtgcagga 120

agcaatgctt atattttggg tggccaagac aaagcacaga actggcatgt ctactctgct 180

tctgcagatt ctgtaactca atgtgacaat gtttacactc ttgagatgtg catgactggc 240

ctggatagag agaaagcaca ggttttctac aaagaacaat ctgcttcagc tggccatgat 300

gactgttaat 310

<210> 2547
<211> 374
<212> nucleic acid
<213> Glycine max

<400> 2547

cacttaaant cgatgcacgc gtacgtaagc tcggaattcg gctcgagctt gcaccattgt 60

ttcatctctc agaaatgatc atgtcgacnc ctatgttctg tctgagtcca gtctctttgt 120

ttatggctta caagatcatc atcaaaacct gtggtactac aaagctactg cttgcaatcc 180

cacccatatt gaaatttgct gaaatgcttt ccctcaatgt taatctgtga attacaccag 240

gggaagtttc atctttcccg gtgctcagcc ctatccccat cgcaactttt ctgaggaagt 300

tgctattctt gatggctatt tggcaagctt agtgcaggaa gcaagcttat atttgggtgg 360

ccagacaaat caca 374

<210> 2548
<211> 343
<212> nucleic acid
<213> Glycine max

<400> 2548

nnntannccc canacgtcgc angcacgcnt acgtnagctc ggaattcggc tcgagntctt 60

ctttgttttc aatnaggttt ttttgttgct ctccttcaaa ctccatcttt ccaaatcctc 120

tctttgcgat tgtgttttga tctgcttcct actgcgatag tttctctact gttacatggc 180

catggcggtt tccgcaattg gttttgaagg tttcgagaaa aggttggaaa tatccttttt 240

ccagccggga ctttttgctg accctgaagg aaggggtcta agggctctta caaaatccca 300

gttgggtgag attctaacac cagctgcttg caccattgtt tct 343

<210> 2549
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2549

nnnnnggcng acgtcgcang cacgcgtacg taagctcgga attcggctcg agcttacacc 60

ggctgcttgc accattgtnt catctctcag aaatgaacat gtcgactcct atgtgctgtc 120

tgagtncagt ctctntgttt atgcctacaa gatcatcatc aaaacctgtg gtactanaaa 180

gctactgctt gcaatcccan ccatattgan atntgctgna atgctttccc ncaatgtnag 240

atctgngaat tacaccaggg gaagtttcnt cttncccggt gctcagccct at 292

<210> 2550
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2550

ngtcgcatgc acgcntacgt aagcncggga attcggctcg agcaaaatcc cagttgggtg 60

agattctaac accagctgct tgcaccattg tntcttcgct caaaaacgat aatgtcgact 120

cctatgtnct atctgagtcc agcctctttg tttatgccta caagatcatn atcaaaacct 180

gtggtactac taagctattg cttgcaatcc cacccatatt gaagttcgct gaaatgcttt 240

ccctaatgtt aagtctgtga attacaccag gggaagtttc atttccccgt gctcagccat 300

<210> 2551
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2551

nngtcgcatg cacgcgtacg taagctcgga attcggctcg aggttcatgt ggatggtgca 60

agcaagtcgt ttgagcagac ctgctttctg gatgttaagg gatactgtcg tgaagagagg 120

agccacgaag ggcttggaat gggtggttct gttgtctacc aaaaattcgg gaagactagt 180

gactgtggtt cacctagatc aactctaaag tgctggaatg aggaagatga ggaagagtag 240

tttccttaag tgtctttatt attctgtcct gtgaaaataa gtctggtttt c 291

<210> 2552
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2552

acgtcgcang cacgcgtacg taagctcgga attcggctcg agtccaaatc ctctctttgc 60

gattgtgttt tgatctgctt cctactggcg atagtttctc tactgttaca tggccatggc 120

ggtttccgca attggttttg aaggtttcga gaaaaggttg gaaatatcct ttttccagcc 180

gggacttttt gctgaccctg aaggaagggg tctaagggct cttacaaaat cccagttggg 240

tgagattcta acaccagctg cttgcaccat tgtttcttcg ctcaaaaacg ataa 294

<210> 2553
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2553

nangnacgcg tncgtnacgt cacgtatanc tcggcattcg gctcgagctt tgttttcaat 60

taggtttttt tgttgctctc cttcaaactc catctttcca aatcctctct ttgcgattgt 120

gttttgatct gcttcctact gcgatagttt ctctactgtt acatggccat ggcggtttcc 180

gcaattggtt ttgaaggttt cgagaaaagg ttggaaatat ccttttcca gccgggactt 240

tttgctgacc ctgaaggaag gggtctaagg gctcttacaa aatcccagtt gggtgaga 298

<210> 2554
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2554

acgcgtacgt aagctcggaa ttcggctcga gggtgcaagc aagtcgtttg agcagacctg 60

ctttctggat gttaagggat actgtcgtga agagaggagc cacgaagggc ttggaatggg 120

tggttctgtt gtctaccaaa aattcgggaa gactagtgac tgtggttcac ctagatcaac 180

tctaaagtgc tggaatgagg aagatgagga agagtagttt ccttaagtgt cttattattc 240

tgtccttgtg aaaataagtc tggttttcca gata 274

<210> 2555
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2555

ncgtcgcatg cacgcgtacg taagctcgga attcggctcg agggtgcaag caagtcgttt 60

gagcagacct gctttctgga tgttaaggga tactgtcgtg aagagaggag ccacgaaggg 120

cttggaatgg gtggttctgt tgtctaccaa aaattcggga agactagtga ctgtggttca 180

cctagatcaa ctctaaagtg ctggaatgag gaagatgagg aagagtagtt tccttaagtg 240

tctttattat tctgtccttg tga 263

<210> 2556
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2556

cacgcgtacg taagctcgga attcggctcg agggtgcaag caagtcgttt gagcagacct 60

gctttctgga tgttaaggga tactgtcgtg aagagaggag ccacgaaggg cttggaatgg 120

gtggttctgt tgtctaccaa aaattcggga agactagtga ctgtggttca cctagatcaa 180

ctctaaagtg ctggaatgag gaagatgagg aagagtagtt tcctaagtgt cttattattc 240

tgtcctgtga aaataagtct ggttttccag atacg 275

<210> 2557
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2557

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gaagcaatgc ttatattttg 60

ggtggccaag acaaatcaca gaactggcat gtctactctg cttctgcaga ttctgtaact 120

ccatgcgaca atgtttacac tctagagatg tgcatgactg gcctggatag agagaaagca 180

caggttttct acaaagaaca atctgcttca gctgccatta tgactgttaa ttctggcatt 240

agaaaaattc ttccagattc tgagatttgt gactttgact 280

<210> 2558
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2558

gtcgcangcg tacgtaagct cggaattcgg ctcgagccca gttgggtgag attctaacac 60

cagctgcttg caccattgtt tcttcgctca naaacgataa tgtcgactcc tatgttctat 120

ctgagtccag cctctttgtt tatgcctaca agatcatcat caaaacctgt ggtactacta 180

agctattgct tccaatccca cccatattga agttcgctga aatgcttncc ttaatgttaa 240

gtctgtgaat acaccagggg aagtttcatt tccccagtgc tcagccatat ccccatcgca 300

attttctgan g 311

<210> 2559
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2559

ctncatgatc gtacgtnagc tcggaattcg gctcgagggt ttttttgttg ctctccttca 60

aactccatct ttccaaatcc tctctttgcn ttgtgttttg atctgcttcc tactgcgata 120

gtttctctac tgttacatgg ccatggcggt ttccgcaatt ggttttgaag gtttcgagaa 180

aaggttggaa atatcctttt tccagccggg actttttgct gaccctgaag gaaggggtct 240

aagggctctt acaaaatccc agttgggtga gattctaaca ccagctgctt gc 292

<210> 2560
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2560

ggntatgcac ncgnacgtgn gcncngagtt cggcncgngg ggggnttccg naatnggttt 60

tgaaggtttc gagaaaaggt tggaaatatc cttnntccan nccgggactt tntgctgacc 120

ctggnaggaa ggggtctaca gggctcttac aaaatcccag ttgggtgaga ttctaacacc 180

agctgcttgc accatgtttc ttncntcana aacgatnntg tcgactccta tgttctatct 240

gagtncagcc tctttgtnna tgcctacaag atcatcancn anacctgt 288

<210> 2561
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2561

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc ncantngggn gagattcnaa 60

naccagctgc ttgcacnant gtttcttcgc tcaaaaacna gcaatgtcga ctcctatgtt 120

ctatctgagt ccagcctctt tgtttatgcc tncaaganca tcatcaaaac ctgggtacta 180

ctaagctatt gcttccaatc ccacccatat tgaagttcgc tgaaatgctt tcccttaatg 240

ttaagtctgt gaattacacc aggggaagtt tcattttccc cagtgctcag ccatatcccc 300

<210> 2562
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2562

ncgcgtacgt aagctcggaa ttcggctcga gcagcattcg ttgcggcatt ttaatcgatt 60

tatccaagca ggactgaatg aactaatgga gtctaaacnc gggaaaaaga agtctagtag 120

tagtagtagt aaatcattgt tctacgaagc tcccctcgga tacagcattg aagacgttag 180

accaaacggt ggaatcaaga aattcagatc tgctgcttac tccaactgcg ctcgcn 236

<210> 2563
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2563

ncncgtacgt aagctcggaa ttnggctcga gctcgagncg gttcatgtgg ntngtgcaag 60

caatttgtnt gatcanacgt gnnttctgga tgttaaggga tactgtcgcg aagagaggag 120

ccacgaaggg cttggaatgg gtggttctct tnncctacca aaaatttgcc aagacttgtg 180

actgtgcgct cacctagatc aactctgaag tgctggaaag aggaagatga agaagagtag 240

ttttcttaag tgtctttatt atgtccttgc gaaaataagt ccggt 285

<210> 2564
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2564

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agaacttttc tgaggaagtt 60

gctattcttg atggctactt tggcaagctt agtgcaggaa gcaatgctta tattttgggt 120

ggccaagaca aatcacagaa ctggcatgtc tactctgctt ctgcagattc tgtaactcca 180

tgcgacaatg tttacactct agagatgtgc atgactggcc tggatagaga gaaagcacag 240

gttttctaca aagaacaatc tgcttcagct gccattatga ctgttg 286

<210> 2565
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2565

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ngttttggtt gattcaaggc 60

cttcacagca ttcgntgcgg cattttnatn gatntntcca agcaggactg natgaactaa 120

tggagtctaa aggtgggaaa aagaagtcta gtagtagtag tagtanatca ttttctacga 180

agctcccctc ggntacagca ttgaagangt tagaccaaac ggtggaatca agannttcag 240

atctgctgct tactccaact gcgctcgcaa accttcctgn tatccatcca gattga 296

<210> 2566
<211> 492
<212> nucleic acid
<213> Glycine max

<400> 2566

ccacgcgtcc gcttcaaatc acacactctc ttcaatttct agggttttgc tattgctttg 60

cctccgttcc ccngntctca caaaaacaac gccttttctc ttctccttcg tatctattct 120

ttgcgtttgg tttttggttg attgaaggca ttcacagcng taattcgttg ctgcatttta 180

atcgatttat ctaaccagga ctgaatgacc taatggagtc taaaggtggg aaaaagaagt 240

ctagtagtag tagtagtaaa tcaatttttt acgaagctcc cctcggatac agcattgaag 300

acgttagacc aaacggtgga atcaagaaat tcagatctgc tgcttactct aactgttctc 360

gcaaaccatc ctgatacaca tccggattga tagttcgttg catgcaacca tagttttatt 420

aggatttttt cttctttgnt ttcaattagg ttttttgtt gctctccttc aaactccatc 480

tttccaaatc ct 492

<210> 2567
<211> 298
<212> nucleic acid

<213>   Glycine max

<400>   2567

gtagcatgca cgcgtacgta agctcggaat tcggctcgag cgtatctatt ctttgcgttt   60

ggtttttggt tgattgaagg cattcacagc gtaattcgtt gctgcatttt aatcgattta   120

tctaaccagg actgaatgac ctaatggagt ctaaaggtgg gaaaaagaag tctagtagta   180

gtagtagtaa atcaattttt tacgaagctc ccctcggata cagcattgaa gacgttagac   240

caaacggtgg aatcaagaaa ttcagatctg ctgcttactc taactgttct cgcaaacc   298

<210>   2568
<211>   277
<212>   nucleic acid
<213>   Glycine max

<400>   2568

gtcgcngcac gcgtacgtaa gctcggaatt cggctcganc tcgagccgaa tcggctcgag   60

aganaaggtt ggaaanctcc tttannccag ccgggacttt anggctgacn ctgaaggaag   120

aggtctaagg gctcttacaa aatcccagtt gggtgagatt ctaacaccag ctgcttgcac   180

cattgtttct tcgctcaaaa acgataatgt cgactcctat gttctatctg agtccagcct   240

cttgtttatg cctacnagat catcatcana acctgtg   277

<210>   2569
<211>   307
<212>   nucleic acid
<213>   Glycine max

<400>   2569

ngtcgttgtn cgcgtacgtn agctcggnat tcggctcgag tttgttttca attaggtttt   60

tgtctgctct ccttcaaact ccgtctttcc gaatcctctc tttgtgattg tnttctgttc   120

tgcttcctac cgcgatagtt tctcttctga agcatggcca tggcggtttc tgcaattggt   180

tttgaaggtt tcgagaagag gctggaaata tccttttttcc agccgggact ttttgctgac   240

cctgagggna tgggtttnag agctcttgcn aagtcccagt tggntgagat acttacaccg   300

gctgctt   307

<210>   2570

<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2570

ggtttttgct gctctccttc aaactccgtc tttccgaatc ctctctttgt gattgtgttc 60

tgttctgctt cctaccgcga tagtttctct tctgaagcat ggccatggcg gtttctgcaa 120

ttggttttga aggtttcgag aagaggctgg aaatatcctt tttccagccg ggactttttg 180

ctgaccctga gggaatgggt ttaagagctc ttgcaaagtc ccagttggat gagatactac 240

accgg 245

<210> 2571
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 2571

ncncgcangc acgcgtacgt aagctcggaa ttcggctcga ggttttctcc caactgagtt 60

ctctgttgca gttcatgtgg atggtgcaag caagttgttt gatcagacgt gttttctgga 120

tgttaaggga tactgtcgcg aagagaggag ccacgaaggg cttggaatgg gtggttctct 180

tgtctaccaa aatttgccaa gacttgtgac tgtggttcac ctagatcaac tctgaagtgc 240

tggnaagagg nagatgcaga agagtagttt tcttaagtgt ctttattatg tccttgcgaa 300

aataagtccg gttttccaga cagtga 326

<210> 2572
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2572

agttgcgcgn acncgtacgt aagctcggaa ttcggctcga gaaatcattg ttctangaag 60

ctcccctcgn atanagcatn ggngacgtta gaccaanngg tggaatcaag aaattcagat 120

ctgntgctta ctccaactgc gctcgcaaan ccttcctgat atccatccng attgatagtt 180

cattgcatgc aaccatagtt tnattaggtt ttntcttctt tgttttcaat taggtttttg 240

ctgctctcct tcaaactccg tctttccgaa tcctctcttt g 281

<210> 2573
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2573

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gtttttctt ctttgttttc 60

aattaggttt ttgctgctct ccttcaaact ccgtctttcc gaatcctctc tttgtgattg 120

tgttctgttc tgcttcctac cgcgatagtt tctcttctga agcatggcca tggcggtttc 180

tgcaattggt tttgaaggtt tcgagaagag gctggaaata tcctttttcc agccgggact 240

ttttgctgac cctgagggaa tgggtttaag agctcttgca aagtcccagt tggatgag 298

<210> 2574
<211> 450
<212> nucleic acid
<213> Glycine max

<400> 2574

aaggggggatt ctgtangngn natnggganng gacaacatan aagcgctatg acgtcgcatg 60

cacgcgtacg taagctcgga attcggctcg agtttatgcc tacaagatca tcatcaaaac 120

ctgtggtacn nntaagctat tgcttgcaat cccacccata ttgaagttcg ctgaaatgct 180

ttcccttaat gttaagtctg tgaattacac caggggaagt ntcattttcc ccagtgctca 240

nccatatcnn catcgcaagn tttntgagga agattnnant gttnttngtt antntnncnn 300

nctttttnna tttacttaac ttatnatttg nncnttttat ntttaagcat natnactnna 360

nntttttnag gngggtgtn ttntttnttn ntctttnttn tttttttnnn attcanttta 420

ttngtttntn tnttnntnnn ntnttcnttt 450

<210> 2575
<211> 218
<212> nucleic acid
<213> Glycine max

<400> 2575

annttacgnt tgaggtcang cacgcgtacg taagctcgga attcggctcg agnttttgaa 60

ggtttcgaga aaaggttgga aatatccttt ttccagccgg gactttttgc tgaccctgaa 120

ggaaggggtc taagggctct tacaaaatcc cagttgggtg agatnctaac accanctgct 180

tgnancattg tntcttcgct caaaaacgat aatgtcgn 218

<210> 2576
<211> 428
<212> nucleic acid
<213> Glycine max

<400> 2576

ccacncntcc gcaagttgtt tgatcagacg tgttttctgn atgttaaggg atactgtcgc 60

gaagnggggg gccactaagg gcttggaatg ggtggttctc tnagtctacc aaaaatttgc 120

caagacttgt gactgnggtt cacctanatc aactctgaag tgctggaaag aggaagatga 180

anaanagtan ttttcttaag tgtctttatt atgtccttgc naaaataagt ccngttttnc 240

agacagngat tgtttntctt tggtgttttt tnccttttat gttagaccat tgttagggca 300

gtttggacct tttattgntc tactattacc atttgaacat cgnatggatt ttaataaaan 360

ananataata tnanngaaat ttatttctta ttattanctt tttnatntat ttnantttta 420

naattctn 428

<210> 2577
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2577

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagn taatgtcgac tcctatgttc 60

tatctgagtc cagcctctnt gtttatgcct acaagatcat catcaaaacc tgtggtacta 120

ctaagctatn gcttgcaatc ccacccatat tgnagttcgc tgaaatgctt cccttaatgt 180

naagtctgtg aattacacca ggggaagnnt cattttcccc agtgcncagc canatnccna 240

tcgcaanttt tnngaggnag tcnccattcc tggatngcct actttggcaa acttggtgcg 300

gangcaatgc tt 312

<210> 2578
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2578

gtcgcatgca gcgtacgtaa gctcggaatt cggctcgagc agccatatcc ccatcgcaac 60

ttttctgagg aagttgctat tcttgatggc tactttggca aacttggtgc aggaagcaat 120

gcttatattt tgggtggcca agacaaagca canaactggc atgtctactc tggcttctgc 180

agattctgaa ctcaatgtgc caatgnttac actcntgagn tgnggcatga ctggctggat 240

agagagaang cncaggtttt c 261

<210> 2579
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2579

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag taaaggtggg aaaaagaagt 60

ctagtagtag tagtagtaaa tcaatttttt acgaagctcc cctcggntac agcattgaag 120

acgttagacc aaacggtgga atcaagaaat tcagatctgc tgcttactct aactgttctc 180

gcaaaccatc ctgatacaca tccggattga tagttcgttg catgcaacca tagttttatt 240

aggatttttc tcttgttttc aattaggttt ttttgttgc 279

<210> 2580
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2580

tcgangcacg cgtacgtaag ctcggaattc ggctcgagaa gcaatgctta tattttgggt 60

ggccaagaca aagcacagaa ctggcatgtc tactctgctt ctgcagattc tgtaactcan 120

tgtgacaatg tttacactct tgagatgtgc atnactggcc tggatagaga gaaagcacag 180

gttttcnaca aagaacaatc tgcttcagct gccatgatga ctgnnaannc cggc 234

<210> 2581
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2581

gcatgcacgc gtacgtaagc tcggaattcg gctcgagntt cttctttgtt ttcaattagg 60

tttttttgtt gctctccttc aaactccatc tttccaaatc ctctctttgc gattgtgttt 120

tgatctgctt cctactgcga tagtttctct actgttacat ggccatggcg gtttccgcaa 180

ttggttttga aggtttcgag aaaaggttgg aaatatcctt ttccagccgg gactttttgc 240

tgaccctgaa ggaaggggtc taagggctct tacaaaatcc cagttgggtg agatctaaca 300

ccagcn 306

<210> 2582
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2582

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ngccttcaca gcattcgttg 60

cggcatttta atcgatttat ccaagcagga ctgaatgaac taatggagtc taaaggtggg 120

aaaaagaagt ctagtagtag tagtagtaaa tcattgttct acgaagctcc cctcggtaca 180

gcattgaaga cgttagacca aacggtggaa tcaagaanct tcagatctgc tgcttactcc 240

aactgcgctc gcaaaccttc ctgatatcca tccggttgat agttncattg catgcnacca 300

<210> 2583
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2583

cgtcgcgtgc ncgcgtacgt aagctcggaa ttcggctcga ggttttattn ggattttntc 60

ttctttgtnt tcaattaggt tttttgttg ctctccttac aaactaccat actttccaaa 120

tcctctcttt gcgattgtgt tttgatctgc ttcctactgc ganagtatcn ctactgttac 180

atggccatgg cggtnnccgc aattggtttt gaaggtttcg agaaaaggtt ggaaatatcc 240

ttttnccagc cgggactttt tgctgaccct gaaggaaggg gtctaagggc tc 292

<210> 2584
<211> 153
<212> nucleic acid
<213> Glycine max

<400> 2584

catgcacgcg tacgtaagct cggaattcgg ctcgagctca gaaatgatca tgtcgactcc 60

tatgttctgt ctgagtccag tctctttgtt tatgcctaca agatcatcat caaaacctgt 120

ggtactacaa agctactgct tgcaatccca ccg 153

<210> 2585
<211> 474
<212> nucleic acid
<213> Glycine max

<400> 2585

tnnaactnta cgcgcccagg taccggtcaa agaattcccg ggtcgaccca cgcgtcngta 60

cggctgcgag aagacgacag aagggtacgg ctgcgagaag acgacagaag gggacacgca 120

actatttctg actacgtttt gctctacgcc tctccctctc tctcaaaaat cgttctcttc 180

gattttaggg ttttgttttg ctgctgcctc cgttcccccc ttctcataaa caacgcgttt 240

tctcttctgc ttcgtatcta ttctttgctt ttggttttgg ttgattcaag gccttcacag 300

cattcgttgc ggcattttaa tcgatttatc caagcaggac tgaatgaact aatggagtct 360

aaaggtggga aaaagaagtc tagtagtagt agtagtaaat cattgttcta cgaagctccc 420

ctcggataca gcattgaaga cgttagacca aacggtggna tcaaagaaat tcaa 474

<210> 2586
<211> 80
<212> nucleic acid
<213> Glycine max

<400> 2586

cagccctatc cccatcgcaa cttttctgag gaagttgcta ttcttgatgg ctacttnggc 60

aagcattgct ngnnagnggg 80

<210> 2587
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2587

tcgcatgcan ncgtagnaat aagctcnana attcggctcg agggcntgga atgggtggtt 60

ctctngtnta ncaaaaacct gccaagactt gtgactgtgg ttcacctaga tcaactctga 120

agtgctggaa agaggaagat gaagaagagt agttttctta agtgtcttta ttatgtcctg 180

cgaaaataag tccggttttc cagacagtga ttgtttttct ttggtgtttt ttccctttta 240

tgttagacca ttgttagggc gtttggacct tttattgttc tactattacc attgaacatc 300

gaa 303

<210> 2588
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2588

ctgcacgcgt acgtaagctc ggaattcggc tcgagggaaa caagtcgttt gagcagacct 60

gctttctgga tgttaaggga tactgtncgt gaagagagga gccacgaagg gcttggaatg 120

ggtggttctg ttgtctacca aaaattcggg aagactantg actgtggtca cctagatcaa 180

ctctaaagtg ctggaatgag gaagatgagg aagagtagtt tccttaagtg tctttattat 240

tctgtccttg tgaaaataag tctggtt 267

<210> 2589
<211> 225
<212> nucleic acid
<213> Glycine max

<400> 2589

ttcaatttct agggttttgc tatacgcttt gcctccgttc cccctttctc acaaaaacaa 60

cgccttttct cttctccttc gtatctattc tttgcntttn gtttttggtt gattgaacgg 120

cattcacagc gtaattggtg ctgcattttn atcgatttat ctaancagga ctgantgacc 180

taatggagtc taaaggtggg aaanagaagt ctagtagtag tagta 225

<210> 2590
<211> 469
<212> nucleic acid
<213> Glycine max

<400> 2590

tntaactctc cngcgcacag gtanacggta tcagagtccc cggcctcgac ccaagcgtca 60

agcccacgcg tccgtacggc tgcgagaaga cgacagaagg ggacacgcaa ctatttctga 120

ctacgttttg ctctacgcct ctccctctct ctcaaaaatc gttctctgnc gattttaggg 180

tttcgttttg ctgctgcctc cgttcccccc ttctcataaa caacgcgttt tctcttctgc 240

ttcgtatcta ttctttgctt ttggttttgg ttgattcaag gccttcacag cattcgttgc 300

ggcattttaa tcgatttatc caagcaggac tgaatgaact aatggagtct aaaggtggga 360

aaaagaagtc tagtagtagt agtagtaaat cattgttcta cgaagctccc ctcggataca 420

gcattnaaag aacttnngac caaacggtgg aatcaaggaa attcagatc 469

<210> 2591
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2591

cacatgcacg cgtacgtaag ctcggaattc ggctcgaggt tttattagga ttttntcttc 60

tttgttttca attaggtttt tttgttgctc tccttcaaac tccatctttc caaatcctct 120

ctttgcgatt gtgttttgat ctgcttccta ctgcgatagt ttctctactg ttacatgcca 180

tggcggtttc cgcaattggt tttgaaggtt tcgagaaaag gttggaaata tccttttcca 240

gccgggactt tttgctgacc ctgaaggaag gggtctaagg gctctacaaa acccagtt 298

<210> 2592
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2592

anacactctc ttgcaatttc tagggttttg gtattgcttt gcctccgttc cccctttctc 60

ncaaaaanaa cgnnttttct cttctccttc gtatctattc tttgcntntc gctttnggnt 120

gantnaaggc attcanagcg taattngttn ctgcattttn atcgatttct ctaancaggn 180

ctgantganc taatggagtc taaaggtggg anaaagaagt ntagtagtan tagtagtaaa 240

tgcnttttnt acgnagctcc cctcggatac agcat 275

<210> 2593
<211> 269
<212> nucleic acid

<213>   Glycine max

<400>   2593

cgcgnncgtn ngctcggaat tcggctcgag cgcaaaccat cctgatacac atccggattg   60

atagttcgtt gcatgcaacc atagttttat taggattttn tcttctttgt tttcaattag   120

gttttttttgt tgctctcctt caaactccat ctttccaaat cctctctttg cgattgtgtt   180

ttgatctgct tcctactgcg atagtntctc tactgttaca tggccatggc ggtttccgca   240

attggttttg aaggtttcga gaaaaggtt   269

<210>   2594
<211>   155
<212>   nucleic acid
<213>   Glycine max

<400>   2594

acgncgcacc nacgcgtacg taagctcgga attcggctcg aggtggtact acaaagctac   60

tgcttgcaat cccacccata ttgaaatttg ctgaaatgct ttccctcaat gttagatctg   120

tgaattacac caggggaagt ttcatctttc ccggn   155

<210>   2595
<211>   301
<212>   nucleic acid
<213>   Glycine max

<400>   2595

naaagtcgca ngcacgcgta cgtaagctcg gaattcggct cgagttcaaa tcacacactc   60

tcttcaattt ctagggtttt gctattgctt tgcctccgtt ccccctttct cacaaaaaca   120

acgccttttc tcttctcctt cgtatctatt ctttgcgttt ngntttnggt tgattgangg   180

cattcacagc gtaattngtt gctgcatttt aatcgattta tctaaccagg actgaatgac   240

ctaatggagt ctaaaggtgg gaaaaagaag tctagtagta gtagtagtaa atcaattttt   300

n   301

<210>   2596
<211>   311
<212>   nucleic acid
<213>   Glycine max

<400> 2596

gtcgcatgca cgcnaacgta agctcggaat tcggctcgag gattgccttc aaatcacaca 60

ctctcttcaa tttctagggt tttgctattg ctttgcctcc gttcccccctt tctcacaaaa 120

acaacgcctt ttctcttctc cttcgtatct attctttgcg nttggttttt ggttgattga 180

aggcattcac agcgtaattn gttgctgcat tttnatcgat ttatctaacc aggactgaat 240

gacctaatgg agtctaaagg tgggaaaaag aagtctagta gtagtagtag taaatcaatt 300

tattacgaag c 311

<210> 2597
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2597

ncnnntgcac gcgtacgtaa gctcggaatt cggctcgagg attgccttca aatcacacac 60

tctcttcaat ttctagggtt ttgctattgc tttgcctccg ntccccccttt ctcacaaaaa 120

caacgccttt tctcttctcc ttcgtatcta ttctttncnt ttngntttng gttgattgaa 180

ggcattcaca gcgtaattng ttgctgcatt tnnatcgatt tatctaacca ggactgaatg 240

acctaatgga gtctaaaggt gggaaaaaga agtctagtag tagtagtagt aaatcaattt 300

tttacgaagc tccc 314

<210> 2598
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2598

cgtacgtaag ctcggaattc ggctcgagat cacacactct cttcaatttc tagggttttg 60

ctattgcttt gcctccgttc cccctttctc acaaaaacaa cgccttttct cttctccttc 120

gtatctattc tttgcntttn gtttttggtt gattganggc attcacagcg taattngttg 180

ctgcatttnn atcgatttat ctaaccagga ctgaatgacc taatggagtc taaaggtggg 240

aaaaagaagt ctagtagtag tagtagtaaa tcaatctttt acgaagctcc cctcggatac 300

agca 304

<210> 2599
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 2599

ctttctgatt gccttcaaat cacacactct cttcaatttc tagggttttg ctattgcttt 60

gcctccgttc cccctttctc acaaaaacaa cgccttttct cttctccttc gtatctattc 120

tttgcgtttg gtttttggtt gattganggc attcacagcg taattngtng ctgcatttna 180

atcgatttat ctaaccagga ctgaatgacc taatggagtc taaagnnggg aaaaagaa 238

<210> 2600
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2600

gtacgtnagc tcggaattcg gctcgagnag aaattcagat ctgctgctta ctctaactgt 60

tctcgcaaac catcctgata cacatccgga ttgatagttc gttgcatgca accatagttt 120

tattaggatt ttttcttctt tgttttcaat taggtttttt tgttgctctc cttcaaactc 180

catctttcca aatcctctct ttgcgattgt gttttgatct gcttcctact gcgatagttt 240

ctctactgtt acatggccat ggcggtttcc gcaa 274

<210> 2601
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2601

caaganattc agatctgctg cttactctaa ctgttctcgc aaaccatcct gatacacatc 60

cggattgata gttcgttgca tgcaaccata gttttattag gatttnttct tctttgtttt 120

caattaggtt tttttgttgc tctccttcaa actccatctt tccaaatcct ctctttgcga 180

ttgtgttttg atctgcttcc tactgcgata gttnctctac tgttacatgg ccatggcggt 240

ttccgcaatt ggntntg 257

<210> 2602

<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2602

acgttttgct ctacgcctct ccctctctct caaaaatcgt tcncttcgat tttagggttt 60

tgtttngctg ctgcctccgt tccccccttc tcataaacaa cgcgttttct cttctgcttc 120

gtatctattc tttgcttttg gttttggttg attcaaggcc ttcacagcat tcgttgcggc 180

attttaatcg atttatccaa gcaggactga atgaactaat ggagtctaaa ggtgggaaaa 240

agaagtctag tagtagtag 259

<210> 2603
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2603

cgcacctctt tctgattgcc ttcaaatcac acactctctt caatttctag ggttttgcta 60

ttgctttgcc tccgttcccc ctttctcaca aaaacaacgc cttttctctt ctccttcgta 120

tctattcttt gcgtttggtt tttggttgat tganggcatt cacagcgtaa ttngttgctg 180

catttnaatc gatttatcta accaggactg aatgacctaa tggagtctaa aggtgggata 240

nagaag 246

<210> 2604
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2604

annctcatgc acgcgtacgt aagctcggaa ttcggctcga gacgttttgc tctacgcctc 60

tccctctctc tcaaaaatcg ttctcttcga ttttagggtt ttgttttgct gctgcctccg 120

ttcccccctt ctcataaaca acgcgttttc tcttctgctt cgtatctatt ctttgctttt 180

ggttttggtt gattcaaggc cttcacagca ttcgttgcgg cattttaatc gntttatcca 240

agcaggactg aatgaactaa tggagtctaa aggtgggaaa aagangtcta gtagtagtat 300

agtaaatcat 310

<210> 2605
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2605

acgtcgcang cacgcgtacg taagctcgga attcggctcg agctacgcct ctcctctctc 60

tcaaaaatcg ttctcttcga tttnagggtt ttgttttgct gctgcctccg ttcccccctt 120

nctcataaac aacgcgtttt ctcttctgct tcgtatctat tctttgcttt tggttttggt 180

tgattcaagg ccttcacagc attcgttgcg gcattttaat cgatttatcc aagcaggact 240

gaatgaacta atggagtcta aaggtgggaa aaagaagtct agtagtagta 290

<210> 2606
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 2606

nanatgnacg cgtacgtaag ctcggaattc ggctcgagct ttctgattgc cttcaaatca 60

cacactctct tcaatttcta gggttttgct attgctttgc ctccgttccc cctttctcac 120

aaaaacaacg ccttttctct tctccttcgt atctattctt tgcgtttggt tttcggttga 180

ntgaaggcat tcacagcgta attngttgct gcatttnnat cgatttatct aagcaggnct 240

gantgagcca atggngtcta aangtgggaa aaagaagtct agtngtagta gtagtaaatc 300

aattttttac gaagctcccc tcggatacag cat 333

<210> 2607
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2607

gcacgcgtac gtaagctcgg aattcggcnt cgagngattg ccttcaaatc acacactctc 60

ttcaatttct agggttttgc tattgctttg cctccgttcc ccctttctca caaaaacaac 120

gccctttctc ttctccttcg tatctattct ttgcgtttng ctttnggttg actganggca 180

ttcacagcgt aattngttgc tgcattttna tcgatttatc taancaggac tgantgacct 240

aatggagtcc aaaggtggga aaaagaagtc tagtagtagt agtagtaaat caatttttta 300

cgaagcnccc ctg 313

<210> 2608
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2608

accangcacg cgtacgtaag ctcgganttc ggctcgagtc tacgcctctc cctctctctc 60

aaaaatcgtt ctcttcgatt ttagggtttt gttttgctgc tgcctccgtt ccccccttct 120

cataaacaac gcgttttctc ttctgcttcg tatctattct ttgcttttgg ttttggttga 180

ttcaaggcct tcacagcatt cgttgcggca ttttaatcga tttatccaag caggactgaa 240

tgaactaatg gagtctaaag gtgggaaaan naagtctagt agtagt 286

<210> 2609
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2609

ncgtcgcang cacgcgtacg tnagctcggn attcggctcg agnnttgctc tacgnctctc 60

cctctctctc aaaaatcgtt ctcttcgatt ttagggtntt gttttgctgc tgcctccgtt 120

ccccccttct cataaacaac gcgttttctc ttctgcttcg tnttattctn gcgcttttgg 180

gatngggttga ntnaaggcct ncanagcatt cgntgcggca ttctaatcga nttatccaan 240

caggnctgaa tnaactantg gagtctaaag gnnggacaaa gaagtctagt ngtngtagna 300

gtaaancatt g 311

<210> 2610
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2610

ngtcnnangc acgcntacgt nagctcggna ttcggctcga gntctgacta cgttttgctc 60

tacgcctctc cctctctctc aaaaatcgtt ctcttacgat tttagggttt ngttttgctg 120

ctgnctccgn tccccccttg ctcataaaca acgcgttttc ncntctgctt cgtatctatt 180

ctttgcntnn ggntttggtt gattcaaggc cttcacagca ttcgtngcgg catttnaatc 240

gatttatcca agcangactg aatgnactaa tggagtctaa aggtgggaaa aagaagtcta 300

gtagtg 306

<210> 2611
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2611

gtcgcangca gcgtacgtaa gctcggaatt cggctcgagc gcctctccct ctctctcana 60

aatcgttctc ttcgatttta gggtnttgtt ttgctgctgc ctccgttccc cccttnctca 120

taaacaacgc gttttctctt ctgcttcgta tctattctac gcttttggtt ttggttgatt 180

caaggccttc acagcattcg ttgnggcatt tnaatcgatt tatccaagca ggactgaatg 240

aactnatgga gnctaaaggn gggaaaaagc agtntagtag cngtagcagt nacncatgtn 300

ntcagnagcn cccngc 316

<210> 2612
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 2612

acttcgcatg cacgcgtacg taagctcgga attcggctcg agctaacacc agctgcttgc 60

accattgttt cttcgctcan aancnntnaa tgtcgantcc tatgttctat ntgngtccag 120

cctgctttgt ttatgtcnta naagatcatc atcgcaacct gtggtnctac tangctattg 180

cttgnaatcc cacccatatt gnngttcgct ganatgcttt ccctgaatgt taagtctgtg 240

aattacacca agggaagttt cattttnnnc atgctcagnc atntccccgt cgcaactttt 300

ctgaggaagn tgctattctt ggatggcta 329

<210> 2613
<211> 274
<212> nucleic acid
<213> Glycine max

<400>   2613

agtctcatgc acgcntacgt nnagctcgga attcggctcg agtgcaacca tagttttatt   60

aggatttttt cttctttgtt ttcaattagg tttttttgtt gctctccttc aaactccatc 120

tttccaaatc ctctctttgc gattgtgttt tgatctgctt cctactgcga tagtttctct 180

actgttacat ggccatggcg gtttccgcaa ttggttttga angtttcgag aaaaggttgg 240

aaatatcctt tttccagccg ggactttttg ctga   274

<210>   2614
<211>   275
<212>   nucleic acid
<213>   Glycine max

<400>   2614

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tttctgattg ccttcaaatc   60

acacactctc ttcaatttct aggnttttgc tattgctttg cctccgttcc ccctttctca 120

caaaaacaac gccttttctc ttctccttcg tatctattct ttgcgtttgg tttttggttg 180

attgaaggca ttcacagcgt aattngttgc tgcattttaa tcgatttatc taaccaggac 240

tgaatgacct aatggagtct aaagntggga aaaag   275

<210>   2615
<211>   302
<212>   nucleic acid
<213>   Glycine max

<400>   2615

ncgcangcac gcgtacgtaa gctcggaatt cggctcgagn tgccttcaaa tcacacactc   60

tcttcaattt ctagggtttt gctattgctt tgcctccgtt ccccctttct cacaaaaaca 120

acgccttttc tcttctcctt cgtatctatt ctttgcgctt ggcttaggnt gactganggc 180

attcacagcg taattcgttg ctgcatttta atcgatttat ctaaccaggn ctgantganc 240

tantgggctc taaaggtggg aaaaagaagt ctaagtagta gtagagtaaa tcaantnncc 300

nc   302

<210>   2616
<211>   294
<212>   nucleic acid

<213> Glycine max

<400> 2616

cgnangcaca cgtacgtaag ctcggaattc ggctcgagnt ttagggtttt gttttgctgc 60

tgcctccgtt cccccttct cataaacaac gcgttttctc ttctgcttcg tatctattct 120

ttgcttttng ttttggttga ttcaaggcct tcacagcatt cgttgcggca ttttaatcga 180

tttatccaag caggactgaa tgaactaatg gagtctaaag gtgggaaaaa gaagtctagt 240

agtagtagta gtaaatcatt gttctacgaa gctcccctcg gatacagcat tgaa 294

<210> 2617
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2617

actnnaagtc gcatgcacgc gtacgtaagc tcggaattcg gctcgagctt tctgattgcc 60

ttcaaatcac acactctctt caatttctag ggttttgcta ttgctttgcc tccgttcccc 120

ctttctcaca aaaacaacgc ctttnntctt ctccttcgta tctattcttt gcgnntngnt 180

ntnggttgat tganggcatt cacagcgtaa ttngttgctg catttnaatc gatttatcta 240

accaggactg aatgacctaa tggagtctaa anntggggaa aangaagtct agtagtagta 300

gtagtaaatc aatttntacg 320

<210> 2618
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2618

ncntcgcatg cacgcgtacg taagctcgga attcggctcg aggttccccc cttctcataa 60

acaacgcgtt ttctcttctg cttcgtatct attctttgct tttggttttg gttgattcaa 120

ggccttcaca gcattcgttg cggcatttta atcgatttat ccaagcagga ctgaatgaac 180

taatggagtc taaaggtggg aaaaagaagt ctagtagtag tagtagtaaa tcattgttct 240

acgaagctcc cctcggatac 260

<210> 2619

<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2619

nagtcgcatg cacgcgtacg taagctncgg aattcggctc gaggctctac gcctctccct 60

cnatctcaaa aatcgtgctc ttcgatttta gggttttggn ttgctgctnc ctccgttcnc 120

cccttctcat aaacaacgnc gttttctctt ctgnttcgta tctattcttt gcttttggtt 180

ttggttgatt caaggccttc acagcattcg gtgcggcatt ttaatcgatt tatccaagca 240

ggactgaatg aactaatgga gtctaaaggt gggaaaaaga agtct 285

<210> 2620
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2620

atacgcatgc acgcgtacgt aagctcggaa ttcggctcga gatttctgac tacgttttgc 60

tctacgcctc tccctctctc tcaaaaatcg ttctcttcga ttttagggtt ttgttttgct 120

gctgcctccg ttcccccctt ctcataaaca acgcgttttc tcttctgctt cgtatctatt 180

ctttgctttt ggttttggtt gattcaaggc cttcacagca ttcgttgcgg cattttaatc 240

gatttatcca agcaggactg aatgaactaa tggantcnaa nggtgggaaa aagaagtcta 300

gtag 304

<210> 2621
<211> 405
<212> nucleic acid
<213> Glycine max

<400> 2621

gcttctgtcc atccctgtca ttctcaagtt ggctgatgct cttgacatag ctgtgaaatc 60

tgtgaggtac actcgtggaa gcttcatttt ccctggggca cagtcttttc ctcaccgcag 120

tttttccgag gaggtttctg ttcttgacag ctatttcagc aaccttggtt ctggtagcaa 180

agcatatgtt atgggtgacc cttcaaagtc acagatttgg cacatctact ctgcaagtgc 240

acagaccaaa ggatcatctg aagctgtcta tggcctagag atgtgcatga ccggtttaga 300

caaggaaagt gcttctgtgt ttttcaagga gaatacatct tcagcagctt caatgaccga 360

aaattctgga attangaaga ttcttccaca gtctgatata tctga 405

<210> 2622
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2622

gtcgcatgca cgcgtacgta agctcggaat tnggctcgag ctcgagccgc cctgtcattc 60

tcaagttggc tgatgctctt gacatagctg tgaaatctgt gaggtacact cgtggaagct 120

tcattttccc tggggcacag tcttttcctc accgcagttt ttccgaggag gtttctgttc 180

ttgacagcta tttcagcaac cttggttctg gtagcaaagc atatgttncg ggtgaccctt 240

caaagtcaca gatttggcac atctactctg caagtgcaca gaccaaagga tcatctgaa 299

<210> 2623
<211> 200
<212> nucleic acid
<213> Glycine max

<400> 2623

ngtacgtaag ctcggaattn ggctcgagnn tcaagttggg ntgatgctct tgacatagct 60

gtgaaatctg tgaggtacac tcgtggaagc ttcattttcc ctggggcaca gtcttttcct 120

caccgcagtt tttccgagga ggtttctgtt cttgacagct atttcagcaa ccttggttnt 180

ggtagcaaag catatgttat 200

<210> 2624
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 2624

gtnncatgca cgcgtacgta agctcggaat tcggctcgag ctgagaatgg gatggtgagt 60

agtgagggtg aaaccagttt cacttgtgtc atgaagtttg gtggctcctc tgtggcttct 120

gctgatagga tgaaagaggt ggctaccctt atattgagtt ttcccgagga gaggcctatt 180

gttgttctct ctgctatggg aaaaacaaca aacaagcttt tgctggctgg agagaaagct 240

gtgagttgtg gtgttatcaa tgtatcaagt attgaggagc tttgctttat aaaagacctg 300

catctaagga ctgtggatca gcttggtg 328

<210> 2625
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2625

caaatgcgga cattttggaa gcaacttatc cggcagtcgc caagagatta catggtgatt 60

ggctctctga tcctgcaatt gcaattgtta caggcttcct tggaaaggcc cagaaatcat 120

gtgcagtgac aacactgggt agaggggca gtgatttgac agctacagca attgggaaag 180

cactagggtt acctgagatc caggtatgga aggatgttga tggtgtccta acctgtgatc 240

caaatatata ccca 254

<210> 2626
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2626

gagtcgcang cacgcgtacg taagctcgga attcggctcg agcaatattc gaagagttag 60

gtatatcagt tgatgttgta gctacaagtg aagttagtat ttccttgaca ttggatccat 120

caaagctatg gagcagagaa ctaattcaac aggaacttga ctatgttgtc gaagaactgg 180

aaaaaattgc agtagtaaat ctcttaaaga ccagatccat aatctctctc attggaaatg 240

ttcagagatc atcactaata ttggagaagg cctttcatgt tcttcgaact cttgggg 297

<210> 2627
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2627

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag gtggtgttac taatgtgtca 60

agtattgagg agctttgctt tataaaagat ctgcatctaa ggnctgtgga tcagcttggt 120

gtggacggat ctgttattgc aaagcatcta gaagaattgg agcaacttct gaaggggata 180

gctatgatga aagaattgac taaaaggact caggactatt tagtctcctt ggagaatgca 240

tgtcgactag gatcttgctg gcatatctta acaaaatagg tgtcaaggcc gccatacga 299

<210> 2628
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2628

tncacgcgta cgtaagctcg gaattcggct cgagcagata tgatgtatga ccttatccac 60

aaggctcaat caanagatga gtcttataca gctgcattaa atgctgtttt ggagaagcac 120

agtgcaactg cacatgacat acttgancgg agataatctt gctactttct tgtctaaatt 180

gcatcatgat attagtaacc ttaaggcgat gcttcgtgca atatacatag ctggtcatgc 240

aacagagtcc ttacagattt tgttgtggga catggagaat aggtct 286

<210> 2629
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2629

gtcgcgtacg tnagctcgga attcggctcg agcaggcctc aaccctgaaa gaagaattca 60

acattgattt gcgtgtaatg ggcatacttg gttcanagtc aatgcttctt agtgatgtgg 120

gcattgactt agctagatgg agagaacttc gagaggaaag aggagaagtg gctaatgtgg 180

aaaaatttgt tcaacatgta catggaaatc attttatacc aaacacagca ttagtggact 240

gcacagctga ctctgccatt gctggctatt actatgactg gttgcgcaa 289

<210> 2630
<211> 168
<212> nucleic acid
<213> Glycine max

<400> 2630

angcacgcgt acgtnagctc ggaattcggc tcgagngcaa atggatggat acaagggatg 60

tccttatcgt aaatcctact ggttctaatc aagttgatcc tgactatttg gaatctgagc 120

aaagacttga aaaatggtac tctttgaatc catgtaaggt aatcattg 168

<210> 2631
<211> 207
<212> nucleic acid
<213> Glycine max

<400> 2631

gtcgcatgct cgcgtacgtg ggnncggggn tnnnnnnant tnncatactt ttggtgctcn 60

ggtcctgcat ccncngtcta tgagacctgc tanagaaagt gatattcctg ttagggttaa 120

aaattcctac aaccctaaag ctccaggtac tctcnttgct nnngacgngg gatatggnca 180

gggcttttn acctnccttt tttggag 207

<210> 2632
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2632

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag ggtggctttg cggatattga 60

aacgagttac acgtgtgtca tgaagtttgg cggctcctct gttgccaatg cagaaaggat 120

gagagaggtt gccaacctta ttctgagctt cccggaagag aggcctataa ttgtnctctc 180

tgccatggga aagacaacta acatgctgtt gctggctgga gaaaaagctg taagctgtgg 240

nataactang gnngatagtt tgacgnanng gttttnaaaa attggnatcc ggg 293

<210> 2633
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2633

gtagatgtga aacctggtgt gtccttggag gaaaaacaac tacccaaagg agaaacttgg 60

tctgttcaca aatttggtgg aacctgtgtg ggaacctctc aaagaataaa aaatgttgct 120

gacataattc ttaaggatga ttcggggaga aaattggtgg ttgtctctgc aatgtcaaag 180

gtgaaaaata tgatgtatga ccttatccac aaggctcaat cacgcgatga gtcttatata 240

gctgcattgg attctgttta ggagaagcac 270

<210> 2634

<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2634

nncacncgca cgcacgcgta cgtaagctcg gaattcggct cgagcccgga aatcatgtgc 60

agtgacaaca ctgggaagag gggcagtga tttgacggct acaacaattg ggaaagcact 120

agggttgcct ganatccagg tatggaagga tgttgatggt gtcctaacct gtgatccaaa 180

tatataccca aaagcagaac ctgttcctta tttgacattt gatgaggctg cagaactagc 240

ttactttggt gctcaggttc tacatccaca gtctatgaga cctgccagag aaagtgatat 300

tcctgttagg gtt 313

<210> 2635
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2635

gtcgcangca tcgtacgtna gctcggaatt cggctcgagn taaaaggact caggactatt 60

tagtntcctt tggagaatgc atgtnnacaa ggatctttgc nggnacatnc gnaanaaaat 120

aggtgtcaag gctcgccaat atgatgcatt tganattggt tttataanca actgacgact 180

tcacanatgc ggacattttg gnngccactt atccagctgt tgcanagagn ttgcatggtn 240

antagctctc cgctcctgca attgcaattg cnacggctcc ttggaaaggc ccggaactca 300

ngtgcantnc caacactggg ac 322

<210> 2636
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2636

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ctacaagtga agtcagtgtt 60

tccttgacat tggatccatc aaagctatgg agcagagagc taattcagca ggaacttgac 120

catgttgtag aagaactcga gaaaatcgct gtggtgaatc tcctgcagaa tagatccatc 180

atctctctca ttggaaatgt tcagagatca tcactaatat tggagaaggt tctgtattat 240

gctcccttta tttaaattag ttcatatcct aactttcact tatgtataaa gatttactga 300

atttattaca 310

<210> 2637
<211> 438
<212> nucleic acid
<213> Glycine max

<400> 2637

ccacgcgtcc gtcccaaatc tggaagaata tcttgggaag caggtcttag aggctgtttc 60

attgattgaa gttagaaggc acttcattga agcattatcc agtccgtttg gaaggccagt 120

tgaagctgat gctgtctttt gcaggaaggc aacttttctt gctgcatctg gtgttttcac 180

gttcctgaag cagaagaaat accgtgtgac agaaatgttg ggatccaatt gcaagatatg 240

ggacttgagt tccacattgg aagtaatgag attctaatgt gggttttata agaccttggg 300

ctctctgact acaatgatta gcttttgtgg tatgattcac tcaaagttct tatcaattgg 360

tattagagct tttcattatg tctntcaact ncaaaacanc nacntgggtg aataccttca 420

aatttgnact gttnaagt 438

<210> 2638
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 2638

tgcangcacg cgtacgtaag ctcggaattc ggctcgagnt tactcctaac aagaaggcaa 60

attcaggacc acttgatcag tatttgaagt taagagctct tcaaaggcaa tcctatacac 120

attacttcta tgaagcaact gtcggagctg gtcttccaat tgttagcact ttacgtggcc 180

tccttgaaac tggagacaaa atattacaaa tcgaaggcat ctttagtggg actttgagtt 240

acatatttaa taactttaaa gatggccggg cttttagtga ggtagtttct gaagcaaagg 300

aagcaggtta tactgagcca gatccaaga 329

<210> 2639
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2639

cagtatttga agttaagagc tcttcaaagg caatcctata cacattactt ctatgaagca 60

actgttggag ctggtcttcc aattgttagc actttacgtg gcctccttga aactggagac 120

aaaatactgc aaatcgaagg catctttagt gggactttga gttacatatt taataacttc 180

aaagacggcc gggcttttag tgaggtagtt tctgaagcaa aggaagcagg ttatactgag 240

ccagatccaa gagatg 256

<210> 2640
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2640

gtcgnnntnn gggtacgtga gctcggnatt cggctcgagg ggcagtatta acaagcattg 60

ttttgaaacg taatgtgacc atgttggata tagcaagcac tcgcatgctt ggtcngtatg 120

gtttccttgc taaggngttt tcaatctttg aagagttagg catatcagtt gatgttgtag 180

ctacaagtga agtcagtgtt tccttgacac tggnnccatc aaagctatgg agcagagagc 240

taattcagca ggcaagtgaa cttgaccatg ttgtagaaga actcg 285

<210> 2641
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2641

cgcngcnttg tacgtnagct cggnattcgg ctcgagggca gtattaacaa gcattgtttt 60

gaaacgtaat gtgaccatgt tggatatagc aagcactcgc atgcttggtc agtatggttt 120

ccttgctaag gtgttttcaa tctttgaaga gttaggcata tcagttgatg ttgtagctac 180

aagtgaagtc agtgtttcct tgacactgga tccatcaaag ctatggagca gagagctaat 240

tcagcaggca agtgaactga ccatgttgta gaagaactcg ag 282

<210> 2642
<211> 527
<212> nucleic acid
<213> Glycine max

<400> 2642

gnngnnaggc tgnntttngg aannnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nncgagcaat aattgttctc tctgccatgg 120

gaaagacaac taacatgctt ttgctggctg gagaaaaagc tgtaagctgt ggagtaacta 180

atgctgatag tattgatgag ctcaacatag taaaagatct tcatctcagg actgtggaac 240

agcttggagt ggacagaaat gttattgaga agcatctaga agaattggag caacttctaa 300

aggggatagc tatgatgaaa gagttgactc cacggactca agactattta gtttcatttg 360

gagagtgcat gtccactagg atatttgctg catatcttaa tacattagga gttaaggccc 420

gccaatatga tgcatttgag atgggtatta taacaactga tgacttcaca aatgctgaca 480

ttttggaagc aacatatcct gctgttgcaa aaaggttcat aantgat 527

<210> 2643
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2643

nttcgcangc acgcgtacgt aagctcggaa ttcggctcga ggttgccaac cttattctga 60

gcttcccgga agagaggcct ataattgttc tctctgccat gggaaagaca actaacatgc 120

tgtngctggc tggagaaaaa gctgtaagct gtggagtaac tatggctgat agtattgacg 180

agctcagcat tataaaagat ctgcatctca ggactgtgga agagcttgga gtggacagaa 240

atgctattga gaagcatcta gaagaattgg agcaactttt aaaggggata g 291

<210> 2644
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2644

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagg aaagaatgag agaggttgcc 60

aaccttattc tgagcttccc ggaagagagg ccaataattg ttctctctgc catgggaaag 120

acaactaaca tgcttttgct ggctggagaa aaagctgtaa gctgtggagt aactaatgct 180

gatagtattg atgagctcaa cataatanaa gatcttcatc tcaggactgt ggaacagctt 240

ggagtggaca gaaatgttat tgaga 265

<210> 2645
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2645

cangcacgcg tacgtnagct cggnattcgg ctcgagcaag cactcctggt gttagtgcct 60

cccttttcaa tgcattggct aaggccaata taaatgtccg tgctatagcg caaggttgtt 120

ctgagtacaa tattactgtt gttgttaagc gagaggattg tataaaggct ttacgagctg 180

tccattccan attttatctc tcaagaacca ccatagcaat gggcattatt ggacctggat 240

taattgggag cacactactt gaccagctaa gggatcaggc ctcaaccctg aaagaagaat 300

tcaacat 307

<210> 2646
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2646

nngnngcann cacgcgtacg tnagctcgga attcggctcg anntccgtgc tatagcgcaa 60

ggntgttctg agtacaatat tactgttgtt gttaancgag aggnttgtat aaaggcttta 120

cgagctgtcc attccagatt tnatctctca agaaccacca tagcaatggg cattattgga 180

cctggattaa ttgggagcac actacttgac cagctanagg atcaggcctc aaccctgaaa 240

gaagaattca ncattgattt gcgtgtaatg ggcatacttg gttcaaagtc aatgctctta 300

gtgatgttgg cattgacttn ncctagn 327

<210> 2647
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2647

ngtnggnnta cgtnagctcg gaattcggct cgagcggatc tgttatttca aagcatctag 60

aagaattgga gcaacttctg aaggggatag ctatgatgaa agaattgact aaaaggactc 120

aggactattt agtctccttt ggagaatgca tgtcgacaag gatctttgct gcatatctta 180

ataaaatagg tgtcaaggct cgccaatatn atgcatttga gattggtttt ataacaactg 240

acgacttcac aaatgcggac attttggaag cnacttatnc agctgttgca aagagattgc 300

atggtgattg gctctcc 317

<210> 2648
<211> 334
<212> nucleic acid
<213> Glycine max

<400> 2648

tcgcangcac gcgtacgtaa gctcgggaat tcggctcgag ctcatttcca gagcatctag 60

aagaattgga gcaacttctg aaggggatag ctatgatgaa agaattgact aaaaggactc 120

aggactattt agtctccttt ggagaatgca tgtcgacaag gatctttgct gcatatctta 180

ataaaatagg tgtcaaggct cgccaatatg atgcatttga gattggtttt atagcaactg 240

acgacttcac aaatgcggnc attttggaag caacttatcc agctgttgca aagagattgc 300

atggtgattg gctctccgat cctgcaattg caat 334

<210> 2649
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2649

ngcacgcgta cgtaagctcg gaattcggct cgngnnatgt ccctccgcga gancggcccc 60

tccatcgccg tcgtgggcgt catcggcgcc gncggccagg agttcctact ccgtcctctc 120

cgaccgcgac ttcccctacc gctccntcat atgctggctt ccaagcgctc cgctggccgc 180

cgcatcacct tcgaggacag ggactacgtc gtccaggagc tcacgccgga gagcttcgac 240

ggtgtcgcat cgcgctcttc agcgccggcg gctccatcag caagca 286

<210> 2650
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2650

gtnnangcac gcgtacgtaa gctcggaatt cggctcgagg acgctccggt gggcgccgca 60

tcacctttna gnnccaggga ctacgtcgtg ncggagctga cggcggagan cttcgatggc 120

gtcganatcg cgatctncan cgccgncggc ncccattagc aagtacttcn gccccatcnn 180

cgtcnatcgg ggaacggtgn tcgncgacan cagatccgcn tntcggatgg acnanaatgt 240

cccattggta atncccgaat caaacccgtn nccatgcaaa 280

<210> 2651
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2651

ncacgcgtnc gtanacgtnn gnattcngct cgannngcgn nnngctgggg cgccgcatca 60

cctttgagtn acagggacta cgtcgtggag gagctgacgg cggagagctt cgatggcgtc 120

gacatcgcgc tcttcagcgc cggcggctcc attagcaagt acttcggccc catcgccgtc 180

gatcggggaa cggtggtcgt cgacaacagc tccgcgtttc ggatggacga gaatgtccca 240

ttggtaattc ccgaagtgaa cccggaagca atgcaaaaca tcaaagccgg aatggaaagg 300

gcgcattcat gctaacccta att 323

<210> 2652
<211> 402
<212> nucleic acid
<213> Glycine max

<400> 2652

gggaataaaa cctgctttct atttttctca acctaaaatc ccatccacca accttatgat 60

gatgtcttca ctctctgttt cgcgccacaa ccacctcttc tcgggccctc tcccggcccg 120

gcccaagccc aagcccagct tttcctcttc caggatccga atgtccctcc aagaaaacgg 180

cccctccatc gccgtcgtgg gcgtcaccgg cgccgtcggc caggagttcc tctccgtcct 240

ctccgaccgc gacttcccct acagctccat caaaatgctc gcgtccaagc gctccgctga 300

gcgccgcatc acctttgagg acagggacta cgtcgtggag gagctgacgg cggagaactt 360

cgatggcgtc gacatcgcgc tcttcancgc cgggcggctc aa 402

<210> 2653

<211> 482
<212> nucleic acid
<213> Glycine max

<400> 2653

gggnngggnn nnnnttaact ttccagggcc cggtcaggaa aacccgggtc gacccacgcg 60

tcngtacggc tgcgagaaga cgacagaagg gggggacatg gaattggaag acaagttgga 120

gtgtggtggt ctgttttaaa atccaacact taatctctct cttcgcagcc taaaatccca 180

atggcttcac tctctgtttt gcgccacaac cacctcttct cgggcccccct cccggcccgc 240

cccaagccca cctcctcctc ctcctccagg atccgaatgt ccctccgcga gaacggcccc 300

tccatcgccg tcgtgggcgt caccggcgcc gtcggccagg agttcctctc cgtcctctcc 360

gaccgcgact tcccctaccg ctccattcat atgctggctt ccaagcgctc cgctggccgc 420

cgcatcacct tcgangacaa ggactaagtc gtccaagaac tcangccggg anaacttcaa 480

cg 482

<210> 2654
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2654

cangcacgcg tacgtaagct cggaattcgg ctcgagctct cttcgcagcc taaaatccca 60

atggcttcac tctctgtttt gcgccacaac cacctcttct cgggcccccct cccggcccgc 120

cccaagccca cctcctcctc ctcctccagg atccgaatgt ccctccgcga gaacggcccc 180

tccatcgccg tcgtgggcgt caccggcgcc gtcggccagg agttcctctc cgtcctctcc 240

gaccgcgact tcccctaccg ctccattcat atgctggctt ccaagcgctc cgctggccgc 300

cgcatcacct tcgaggacag ggactac 327

<210> 2655
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2655

gtngcccnca cgcgtacgta agctcggaat tcggctcgag gagctttgcc acaagaaggg 60

gactttgctc tgtattgatg gtacatttgc aacaccattg aaccagaagg cccttgccct 120

tggcgctgat ctgattctgc actccttaac aaaatacatg ggtggacatc atgatgtaag 180

ttggcatgtt caagatttag tttgatggaa aaacaacaca aatatgttac attttcaggg 240

ttaagagtta agcgtcaagg agcattttcc tctttcaggc ccttggtggt tgcataagtg 300

gttcaactaa gg 312

<210> 2656
<211> 542
<212> nucleic acid
<213> Glycine max

<400> 2656

gnnnangtnn ntntcnaana ngntaanctt tnnaaaccct ccatttnggt aancnccggg 60

gccacgcgtc cgcncacgcg tncgcccacg cgtccggaga gaaagagagg gagtaagtgg 120

gtnnaggang gaaaactaaa gaaacaaacc taacacaaca caaatccttg aaacgacgac 180

ggaaatggcc gtttcgagct cgcacatgcg tttcaccttt gagtgccgct ccgatcccga 240

tttctcgccc cccccgccgt ccttcgacaa cctccgccgc cgaaacttcc gctcctccgc 300

aggatccggc gcggcgtttc acggcatctc ctccctcatc ctccgcttcc tcccaacttc 360

cagcgccagc taagcaccaa ggcgcgccgc aactgcagca acatcggcgt cgcgcaaatc 420

gtcgccgctt cgtggtcgaa caacagcnac aactnttcgg ccgncggggc ttcngcgccg 480

accggggnca ccggcacgga cccggtacgg ggcttttccc gtngtcgtaa cgncnaacaa 540

gg 542

<210> 2657
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2657

cgtcgcangc acgcgtacgt ncagctcgga attcggctcg agcggatctt gacatggttg 60

atgctgccat agtagaaggg aaaacaaaag tgctttactt cgaatctgtt tccaacccca 120

cccttacggt tgcgaacata cctgaactgt gccacatggc acaccggaag ggagtgacgg 180

tggtggtgga caacacgttc gcgcccatgg tgctttcgcc agcgcgtctt ggtgctgatg 240

ttgtcgttca cagtatctcc aagttcatca gcggtggggc cgatatcatt gcaggagcgg 300

tgtgcg 306

<210> 2658
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2658

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gacggatctt gacatggttg 60

atgctgccat agtagaaggg aaaacaaaag tgctttactt cgaatctgtt tccaacccca 120

cccttacggt tgcgaacata cctgaactgt gccacatggc acaccggaag ggagtgacgg 180

tggtggtgga caacacgttc gcgcccatgg tgctttcgcc agcgcgtctt ggtgctgatg 240

ttgtcgttca cagtatctcc aagttcatca gcggtggggc cgatatcatt gcaggagcgg 300

tgtgcgg 307

<210> 2659
<211> 515
<212> nucleic acid
<213> Glycine max

<400> 2659

gnnnngnaga gtttgnttgg ggggnaggga gnnanatttt nagaccacta tgacgtcgca 60

tgcacgcgta cgtaagctcg ganttcggct cgagagacag aggntagaga angagaggga 120

gtaagtgggt aaaggaaaga naactaaaga aacaaaccta acacaacaca aatccttgaa 180

acgacgacgg aaatggccgt ttcgagctcg cacatgcgtt tcacctttga gtgccgntcc 240

gatcccgatt tctcgccccc cccgccgtcc ttcgacaacc tccgccgccg caacttccgc 300

tcctccgcag gatcccggcg cggcgtttca cggcatctcc tcctcatcct ncgcttccct 360

cccaacttcc agcgccagct aagcaccaag gcgcgccgca actgcagcaa catcggcgtc 420

gcgcaaatcg tcgccgcttc gtggtcgaac aacagcgaca actctccggc cggcggggct 480

tcggcgccgg ccgcggcacc ggcacggacg ccgtt 515

<210> 2660
<211> 258
<212> nucleic acid

<213> Glycine max

<400> 2660

caaggacatc atgatgtcct tggtggttgc ataagtggtt caattnnngt ggtttcgcaa 60

attcggactt tgcaccatgt nttgggtggt acacttaacc cgaatgctgc atacctattc 120

atcagaggca tgaaaacgct gcatctccgt gtacagcagc agaattcaac aggaatgagg 180

atggccaaac ttttagaggc acatcccaag gtgaagcggg tctactatcc aggcttgccg 240

agtcaccctg aacatgag 258

<210> 2661
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2661

ganattgtca tgcactctgc tacaaaattt attgctggac atagtgacat tatggctggt 60

gtgcttgctg tgaagggtga aaagttggga aaggaattgt atttcttgca aaatgcagag 120

ggttcaggct tagcaccatt tgactgttgg ctttgtttgc gaggaatcaa gacaatggcc 180

ctgcgaattg aaaaacaaca ggataatgca cagaagattg ctgagttcct tgcctcccat 240

cctcgagtga agaaagtgaa ttatgctggc ttgcctg 277

<210> 2662
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2662

gcatgcacnc gtacgtaagc tcggaattcg gctcgagntt gcctcccatc ctcgagtgaa 60

gaaagtgaat tatgctggct ngcctggtca tcctggtcgt gatttacact attctcaggc 120

aaagggtgca ggatctgtgc ttagcttctt gactggttca ttggaacttt caaagcatat 180

tgttgaaact accaaatact tcagtataac cgtcagcttt gggagtgtga agtcccttat 240

tagcatgcca tgctttatgt cacatgcaag cnngncngct ggcagttcgt gaggccagag 300

tttaagaaga tctgtagtat at 322

<210> 2663

<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2663

cgcangcacg cgtacgtaag ctcggaattc ggctcgagaa acaacaggat aatgcacaga 60

agattgctga gttccttgcc tcccatcctc gagtgaagaa agtgaattat gctggcttgc 120

ctggtcatcc tggtcgtgat ttacactatt ctcaggcaaa gggtgcagga tctgtgctta 180

gcttcttgac tggttcattg gaactttcaa agcatattgt tgaaactacc aaatacttca 240

gtataaccgt cagctttggg agtgtgaagt ccc 273

<210> 2664
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2664

gcacgcgtac gtaagctcgg aattcggctc gaggttcagg cttagcacca tttgactgtt 60

ggctttgttt gcgaggaatc aagacaatgg ccctgcgaat tgaaaaacaa caggataatg 120

cacagaagat tgctgagttc cttgcctccc atcctcgagt gaagaaagtg aattatgctg 180

gcttgcctgg tcatcctggt cgtgatttac actattctca ggcaaagggt gcaggatctg 240

tgcttagctt cttgactggt tcatggaact tcaaagcata ttgttgaaa 289

<210> 2665
<211> 499
<212> nucleic acid
<213> Glycine max

<400> 2665

aacttttacg ccnccangtg ccgggcaang gtnangagnt cccgggtcga cncacgcgtc 60

cggcnagaag acgacagaag gggacggtgg tggtggacaa cacgttcgcg cccatggtgc 120

tttcgccagc gcgtcttggt gctgatgttg tcgttcacag tatctccaag ttcatcagcg 180

gtggggccga tatcattgca ggagcggtgt gcggacccgc aagactggtg aacgcaatga 240

tggatctgca acaagggtca ctaatgctgc tgggtccaac aatgaatgcg aaagtggcat 300

tcgaactctc ggagagaata ccgcacctag ggctaagaat gaaggagcat agcaaccgcg 360

cactagagtt cgcaacgagg ctcaaaaggc taggaatgag ggtaatatac ccgggcctgg 420

aggagcaccc acagcaccaa gcttctgaaa tcaatgcaca acaaggacta tggctacggc 480

gggctcatgt tcntngaca 499

<210> 2666
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 2666

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgaga cgggaggtca agcccgccct 60

gaccaacatg gtctccgctg ctaagctcat tcgcacccag ctcgccagcg ccaagtgagc 120

acctttttttt gcctttttcg tttccgagga gggcgtcgtc gatgccaatt tgtntccaat 180

aaacagggct ccccccctgt gcccgccgtt ctgttgtgct ccgtctgtgg ttaggttact 240

agttttcttg atctcgcccc cacgcggtac ctgttttata tctgtttggt ggtttctgag 300

gcaagttgcc cgtgtattgt atcgta 326

<210> 2667
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2667

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gggacactac tcagattcac 60

actcacatgt gctactccaa cttcaatgac atcattcact caatcataga catggatgct 120

gatgtgatca ccattgagaa ctccagatca gatgagaagt tactttcggt cttccgtgag 180

ggagtgaaat atggtgccgg cattggtcct ggcgtttatg atattcactc acccaggatt 240

cctcccacag aagaaattgc tgacaggatc aacaagatgc ttgcagttct tgaaagcagc 300

attctctg 308

<210> 2668
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2668

nagtcgcacg cacgcttacg taagctcnga attcggctcn nnngnccant ganettgctg 60

cttctctcan taccttggca gggtcttgag ggcattggtg ggcaaagata agcttgttgg 120

tgtccacctn ctcctccctt cttcacactg gctgtggntc tagttaacga naccnagttg 180

gatgatgaga tcaagtcatg gctagctttg gctgcccaaa aaattgttga ngttaacgca 240

tnggctaaag cngtgtcngg ccacaaggat gaggcctnct tctctgntan tgcngctgct 300

ctggcttcaa gan 313

<210> 2669
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2669

cgcangcacg cgtacgtaag ctcggaattc ggctcgaggg ggatgtactt gatcccannc 60

accagccatc tgctcgacgc caccgccanc ctcggtgccg tccccccag gtacggctgg 120

accggcggcg agattggatt cgncacctac ttctccatgg ccagaggtaa tgctaccgtg 180

cntgctangg agatgaccaa gtggttcgac accaactacc actttattgt ccctgaattg 240

ggccctgatg tgaattcacc tatgcttctc acaaggctgt tgatgaatac 290

<210> 2670
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2670

cncgcacgcg tacgtaagcn tcgcgaattc ggctncgagt tgctcccnca gnagcganga 60

agangccaca gagnnctagt ctccctanct ctacacccgc aaganaaana tggcatctca 120

catacgttgg atacccccgt atgggttccc aagagagnnt ncaanttcgc tctcgagtcn 180

ttctgggatn gcaanancag cgccgangct ttgcagangg tgtcntctga tctcagggca 240

nccatctggn ancagttggc tgatgntggg ntcaagtaca tccccngca 289

<210> 2671
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2671

nttgcgtnca cgcgtacgnn agctcggaat tcggctcgca gtgcacgtgt nattangnna 60

aatgagaaan aaaaaaatgg tcatcncaca tcgnnggata cncccgtatg ggtgcccaag 120

agagagcnca agntcgcttc tcgagtcttn cngggatggc aagagcagcg cngaggattt 180

cncagaaggt gtcttcngan ctcagggcat ccancnggaa gcagatggct gttgctggga 240

tcaagtanan cccnancaan acttcngcnc actatgatca ggntcacnac gcnctgccac 300

nct 303

<210> 2672
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2672

agngacgcgt actaagtcgg aattcggctc gagaagataa gcttgttgtg tccacctcct 60

cctcccttct tcacactgct gtnganccca gttaacgaga ccaagttgga tgatgagatc 120

aagtcatggg ctagcttttg nctggcccaa naaaattgtn ngaagttaaa cggcattggg 180

ctaaaaggca ttggtgctgg gaccancaag ggatggaggg cctttctttc tctgggtaaa 240

tggctggctg gctactgggc tttccaaggg aaagttcttt cctn 284

<210> 2673
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2673

cntgcncgta nntnagctcg gaattcggct cgagctgagg ttgttgttgt tgccaaggnt 60

gtaaatnatg gtcccgcttc tgtgcgtgat ggctnctnaa nccaatgcca aatccatgca 120

ggngcntgcc acgtcgaanc gtaccantaa caaggcggtt aaggaccgtc aagccagcgt 180

cactcctgag caacacgngc gcaagtctca gttccctgaa cgttatgccc agcagaagaa 240

gcacttgagc ctccttgttc cccaccacca ccattggttc cttccctcag accana 296

<210> 2674
<211> 269
<212> nucleic acid

<213>	Glycine max

<400>	2674

gcgcntgcan tnanacgtng agntcggaat tcggctcgag cttccaatcc ttccaaccac 60

cactattggn ncnttcngtc agantnnann antgaggagg gtacgccgtg agttcaangc 120

taanaagntc tnnnnnggaa ntntatgnct aagtcaatta aggnggaaat tcgcaaagtt 180

gttgaacttc aagaagagct tgatattgat gttcttgttc atggagancc agagngaaat 240

gntatggttg agtacttcgg tgagcaatt 269

<210>	2675
<211>	216
<212>	nucleic acid
<213>	Glycine max

<400>	2675

nngtcganac ntgcgtacgt aancncggaa ttcggctcga gggcaagacc agcgccgnng 60

attngcagnn ggtgtctnct aancncagga gcatccatcn ggaagcagat ggcngatgct 120

gggatcaant acatccccag caacactttg ctactcacna naaccaggtn ctcgacgccn 180

ccgccaccct acggngccgn tgccacnnag gtangg 216

<210>	2676
<211>	263
<212>	nucleic acid
<213>	Glycine max

<400>	2676

anatgaccag aagacggtca ttggctttgg gcggctctgg ctcagagctt taccaagcgc 60

ccaatgaagg gaatgcttac cggaccagtt gagaatggta acaggaccgg taagcattct 120

caactggtcc tttgttagaa atgaccaacc tagatctgag accacctacc agattgcttt 180

gtctatcaag gacgaagtgg aagaccttga aaaggctggc atcactgtta tccaaattga 240

tgaagctgct ttgagagagg gtc 263

<210>	2677
<211>	291
<212>	nucleic acid
<213>	Glycine max

<400> 2677

cgcangcacg cgtacgtaag ctcggaattc ggctcgagtn gggngcgggn ggcgtgaagc 60

caccgatcat nnatggtgat gtgagccgcc caaagccaat ganngtcttc tngngatnnc 120

tggntcagag ctttacnaag cgcccaatga agggaatgct taccggtcct gttaccannc 180

tcaactgggn nnntgttaga aatgaccanc ctagatctga gaccacctag nagantgctt 240

tgtctatcaa ggacgaatgg aaganncnnn ccaaggctgg catcantgtn a 291

<210> 2678
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2678

cctanggtgc cgntccacna nggnacngnt gncnccggcg gngagattng gtttgatacc 60

tacttctcca tggccanang taatgctacc gtgccagcta tggagatgac caagtggttc 120

gacaccaact accactntat tgtccctgaa ttgggccctg atgtgaactt cacctatgct 180

tctcacaagg ctgttgatga atacaaggag gccaaggcgc ttgnagtgga taccgttccg 240

gtcctcgttg gccctgttac atacctg 267

<210> 2679
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2679

cagaagccnc agaagaagcc acagagaact agtctnctac tcnccaccng caagnaccnn 60

natggcatnn tcncctcgtt ggataccccc gtatgggtcc ncaannngag agctcaagtt 120

gtctcgagtc tttctgggat ggcaagagnn agcgccgagg gatttgcaga aggtgtcttc 180

tgatctccag ggcatccatc tggaagcaga tggtgatgct gggatcaagt acatccccag 240

caaactttct nt 252

<210> 2680
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2680

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gtcgcangca cgcgtacgtn agctcggnat tcggctcgag cacgagacca agttggatga    60
tgagatcaag tcatggctag cttttgctgc ccaanaaatt gttgaagtta acgcattggc   120
taaagcattg tctggccaca aggatgaggc cttcttctct ggtaatgctg ctgctctggc   180
ttcaaggaag tcttctccaa agagttgacc aaacgagggc tgntccagaa agnctgctgc   240
tagcaattga agggttccag atcatngccg gncaacaatt ntccatgcca gactggatnc   300
tcaacaaaag aagnncaacc ttcc                                          324
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<210> 2681
<211> 362
<212> nucleic acid
<213> Glycine max

<400> 2681

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tnnaggtagt agctcggatt cggtcgagct ctccatggcc agaggtaatg ctaccgtgcc    60
tgctatggag atgaccaagt ggtncgacac naactaccac tttattgtgc ccngnattgg   120
gccctggatg nagaactttc acctatgnct ntcttcacaa gggctgtntg gatgcagata   180
ncaagggaag gtccaagggt cgatttgggg agtcgggata nccaatntcc ncggnaactc   240
cgtntggggc cnctggttta ancatnactt tggtataggc tacctnncca aaggtcctgg   300
gcacaaangg ggcaaatttc gganggtaaa attcccattg gggggcttcc tgcccttgct   360
tc                                                                  362
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<210> 2682
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2682

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cgtcgnangc ncgcgtncgt cagctcggnn ttcggctcgn gctgnacctg tgcttgtggg    60
acctgtttct tncttgttgc tgtcannacc agctaagggt gttgagangt cattttccct   120
tctttcccta attgacaaga tccttcctgt ctacagggaa gttgtggctg aactgaaggc   180
agctggtgct acttggatcc agtttgatga acctaccctt gtgaaggatc tcaatgccca   240
ccagttacaa gcatttaccc atgcctacgc agagttagag tcaagtttnt ctggtttgnn   300
```

tgttctgatt ganacatact t 321

<210> 2683
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2683

gnngcacgcg tacgtaagct cggaattcng ctcgagctgn cntcaacttg ntccctcaga 60

agcgnntann aatccacana gaactatgtc tcnctactnc ncacccgcaa gaaaaaaatg 120

gcntntcaac atcgttggat acccccgtat nggncccaat agaganctna attcgctctc 180

gagtctatct gggatgncaa nagtacgccg aggatttgca naangngtct actgatctca 240

gggcatccnt ctgganncag atggntnatg ctgggatcag tacatccnca gcaacatttc 300

tctnactntg accan 315

<210> 2684
<211> 174
<212> nucleic acid
<213> Glycine max

<400> 2684

gctgcaggca cgcgtacgtn agctcggaat tcggctccgn gcttcanctt gctccctcag 60

aagcgnagaa gaagcccana gagaanagnc tcctantctc acccgcaagn nnaanatggn 120

atctcacatc gttggntacn cccgtatggg tcccaagaga gagctnaagt tgnt 174

<210> 2685
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2685

aacngaaagn cgcangcacg cgtacgtaag ctcggaattc ggctcgagct tcaggatctc 60

cgaggaagag tatgtaaagt caattaagga ggaaattcgc aaagttgttg agcttcaaga 120

agagcttgat attgatgttc ttgttcatgg agaaccagag gtccgctctc atttcataac 180

atgactaaat attagtcttt tgaattgaag atagcttctt tctttctgaa gagcaactac 240

tctttgcata ttttctttcc tattgttaga ttgcngattc caaaattgca gcacctccaa 300

ctn 303

<210> 2686
<211> 103
<212> nucleic acid
<213> Glycine max

<400> 2686

gntttntttn ttttttgggt tgttttcnnt tggttttttt tgtttttnnt gnttnttggt 60

tntttgtttt tttttgtttn ttntgttttn tttttttttt nnt 103

<210> 2687
<211> 523
<212> nucleic acid
<213> Glycine max

<400> 2687

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nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnngnttgnt nccttanaag cnaagaagaa 120

nccncanana ancnggcttc taattttttt taaccaccag aaaaatggnn ttttaaantc 180

ggtnggntnc cccggattgg gnccaaggag agagctaaag ttcgttctcg agtctttctg 240

ggatggcaag gagcagcgcc gaggatttgc agaaaggtgg ctgcttgatc tcaaggtcat 300

ccatctggna agcagatggc tggtggctgg gatcaaagta ccttccccag caacactttt 360

ctcgttctat gaccaagctt gntcgacgcc accgncaccc tcggtgccgt cccccccagg 420

tacggntgga ccggcggcga gattggattc gacacctact tctccatggn cagaggtaat 480

gctaccgtgc ctgctatgga gatgaccaat ggttcgacac caa 523

<210> 2688
<211> 570
<212> nucleic acid
<213> Glycine max

<400> 2688

agaggcctgc ttgnctttat canananann ncacngccat gccctccgaa cttccatttc 60

ngcccaggcg tactcccacg cntcctcagt ngnccaacga ggctgttcan aangctgctg 120

ctgcattgaa ngnttnggan ggtntccntg caacaaatgt caggtgccan actggattct 180

caacaaaaga anctcaacct tncaatnctg ncaaccacca ctattggatc cttccctcag 240

actgtataac tgaggagggt acgcccctga attnaaagct aacaagatct ccgangaana 300

ngtatgtnna tgtcanttta aggaggaaat tttcaaantt tgtttgagct tnnataaaag 360

cttnatattn atnttcttgt catnnagaan nncagatgaa atgntatggt tcnagtncct 420

tttngggaca aattttctaa ncttttttccn tttacncnnn tatnnggtnn gttncaaatc 480

ttttgggtcc ccctttcntn naaanccnnn atcatntttt ngntgantt tatncnccca 540

aantnaanna nnccgctttn ttttnttttt 570

<210> 2689
<211> 566
<212> nucleic acid
<213> Glycine max

<400> 2689

agaggttnnn tttttnnat nnaaagtatt ttnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnngttagg naaatgacca 120

accttagatc tnngaccacc taccngggtg ctttggctat naagggccna antggaggga 180

ccttgaaaag gctggcatca ctgttatcca aattgatgaa actgctttga gagaaagggt 240

ctgccactga gggaaatcaa gaacaaggct cacttacttg gactgggctn gtncatgcct 300

ttnagnaatc accaatgttg gnntnntccn ngataccact caaaattcac acccacatgt 360

gctanctcca aacttttaac gacattnttc aatccatnaa tttnacatgg gcccttattg 420

ttattcacca tttgaanaac tnttgcttcc gaattaanaa acttccntgt naaagtcntt 480

tcntggaaaa ggtgttaaaa nattgggtct tgggaaattn ggnccttggn ngtttattta 540

aaatnccant tccccaanaa atnccc 566

<210> 2690
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2690

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc aaagaccctt gatttgataa 60

agcaaggntt tccatctgga aaatttcttt ttgctggtgt tgttgatgga agattnattt 120

gggccaataa ttttgcatct tctctgaaca cccttcaggc acttggagac attgttggaa 180

atgacaaggt tgtggtttcc acgtcgtgtt ctcttcttca cactgcagtt gatctggtga 240

atgagaccaa attggaccaa gagattaagt cttggcttgc atttgcagca caaaaagttg 300

<210> 2691
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2691

ngtcgcangc acgcgtacgt nagctcggaa ttcggctcga gcttgatttn atcaagcaag 60

gatttccatc tggaaaattt ctntncgctg gtgttgttga tgngaagana tatttgggcc 120

aatagtcttg catcttctct gaacaccctt caggcacttg gggacattgt tgggaatgac 180

aaggttgtgg tttccacgtc ctgttctctt cttcacactg cagttgatct gtgaatgag 239

<210> 2692
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2692

tcgcatgcac gcntaagtna gctcggaatt cggctcgagc atttactgcc aatgggtggg 60

tgcaatcata tggatcccgc tgtgtcaaac ctcccatcat ctatggtgat gtgagccgtc 120

ccaagcccat gacagttttc tggtcttcaa ctgctcaaag tttgaccaaa cgaccaatga 180

agggaatgct tactggccct gttactattc tgaactggtc ctttgttaga gatgaccaac 240

caagatttga aacatgttac cagattgctt tggctatcaa ggatgaggtt gaggatcttg 300

aga 303

<210> 2693
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2693

gtcgcacgca cgcgtacgtn agctcggaat tcggctcgag ctgtgtcaag cctcccatca 60

tctatggtga tgtgagccgt cccaanccca tgactgtttn ctggtcttnc aactgctcaa 120

agtttgacca aacgaccaat gaagggaatn cttactggcc ctgttactat tctgaactgg 180

tcctttgtta gagatgacca gccaagattc gaaacatgct accagattgc tttggctatc 240

aaggatgagg ttgaggatct tgagaaagca ggtattactg tcatccagat tgatgaagct 300

gctctt 306

<210> 2694
<211> 459
<212> nucleic acid
<213> Glycine max

<400> 2694

ccacgcgtcc ggtgttctct tcttcacact gcagttgatc tggtgaatga gaccaaattg 60

gaccaagaga ttaagtcttg gcttgcattt gcagcacaaa aagttgttga agtaaatgcc 120

ttggccaagg cattgtctgg acagaaggat gaggttttct tttctgctaa tgctgctgcc 180

ttggcttcaa ggaagtcctc cccaagggtg ataaatgagg ctgtccaaaa agccgctgct 240

gctctgaagg gctctgatca tcggagggcc acaaatgtta gtgccaggtt ggatgctcaa 300

cagaagaaat tgaatctttc tgttcttcca acaactacaa ttggatcttt ccctcaaact 360

gccgatctta gaagagttcg tcgtgaattc aaggctaaca agatctccga ggaagattat 420

atcccgtttc attaaggagg aaatttacaa tgttgtaaa 459

<210> 2695
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2695

gcncgnacgc gtacgtaagc tcggaattcg gctcgagggt tttcttttct gctaatgctg 60

ctgccttggc ttcaaggaag tcctccccaa gggtgataaa tgaggctgtc caaaaagccg 120

ctgctgctct gaagggctct gatcatcgga gggccacaaa tgttagtgcc aggttggatg 180

ctcaacagaa gaaattgaat ctttctgttc ttccaacaac tacaattggn tctttccctc 240

aaactgccga tcttagaaga gttcgtcgtg aattcaaggc taacaagatc tccgaggaag 300

attata 306

<210> 2696

<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2696

acgtcgcatg cacgcgtacg taagctcgga attcggctcg aggtaaatgc cttggccaag 60

gcattgtctg gacagaagga tgaggttttc ttttctgcta atgctgctgc cttggcttca 120

aggaagtcct ccccaagggt gataaatgag gctgtccaaa aagccgctgc tgctctgaag 180

ggctctgatc atcggagggc cacaaatgtt agtgccaggt tggatgctca acagaagaaa 240

ttgaatcttt ctgttcttcc aacaactaca attnggtctt tccct 285

<210> 2697
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2697

acgtcgcang cacgcgtacg taagctcgga attcggctcg agngaagctg tccaaaaggc 60

cgctgctgct ctgaagggct ctgatcatcg gagggccaca aatgttagtg ccaggctgga 120

ttctcaacag aagaaactga atcttcctgt tcttccaaca actacaattg ngctctttcc 180

ctcaaactgc cgatcttaga agagttcgcc gtgaattcaa ggctaacaag atctccgagg 240

aanntatatc catttcatta aggagggaaa ttaacaatgt tgtgaagctc caggaagaat 300

tga 303

<210> 2698
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2698

gtcgcntgca cgcgtacgta agctcggaat tcggctcgag tggtgaatga naccaaattg 60

gaccaagaga ttaagtcttg gcttgcattt gcagcacaaa aagttgttga agtaaatgcc 120

tggccaaggc attgtctgga agaaggatga ggttttcttt tctgctaatg ctgctgcctt 180

ggcttcaagg aagtcctccc caagggtgat aaatgaggct gtccaaaaag ccgctgctgc 240

tctgaagggc tctgatcatc 260

<210> 2699
<211> 193
<212> nucleic acid
<213> Glycine max

<400> 2699

taacnagacg tcgcangcac gcgtacgtaa gctcggaatt cggctcgagn tgataaatga 60

ggctgtccaa aaagccgctg ctgctctgaa gggctctgat catcggaggg ccacaaatgt 120

tagtgccagg ttggatgctc aacagaagaa attgaatctt tctgttcttc caacaactac 180

aattggatct ttc 193

<210> 2700
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2700

gtcgcangca cgcgtacgta agctcggaat tcggctcgag nctggtatta ctgtcatcca 60

gattgatgag gctgctctaa gagaaggttt acctctgagg aagtctgagg aggctttcta 120

tctaaactgg gctgttcact catttaggat taccaactgt ggtgtggagg acactactca 180

gattcacact cacatgtgct actccaactt caatgacatc attcactcan tcntagacat 240

ggatgctgat gtgatcacca ttgagaactc cagatcagat gagaagttac tttcggtctt 300

ccgtgng 307

<210> 2701
<211> 361
<212> nucleic acid
<213> Glycine max

<400> 2701

gtcgcatgca gcgtacgtaa gctcggaatt cggctcgagg attcgaaaca tgctaccaga 60

ttgctttggg ctatcaagga tgaggttgag gatcttgaga aagcaggtat tactgtcatc 120

cagattgatg aagctgctct aagagaaggt ttacctctga ggaagtctga ggaggctttc 180

tatctaaact gggctgttca ctcatttagg attaccaact gtggtgtgga ggacactact 240

cagattcaca ctcacatgtg ctactccaac ttcaatgaca tcatcactca atcatagaca 300

tggatgctga tgtgatcacc atgagaactc tagatcagac gagaagttac tttcagtctt 360

c 361

<210> 2702
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2702

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gctgctctaa gagaaggttt 60

acctctgagg aagtctgagg aggctttcta tctaaactgg gctgttcact catttaggat 120

taccaactgt ggtgtggagg acactactca gattcacact cacatgtgct actccaactt 180

caatgacatc attcactcaa tcatagacat ggatgctgat gtgatcacca ttgagaactc 240

tagatcagac gagaagttac tttcagtctt ccgcgaggga gtgaaatatg gtg 293

<210> 2703
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2703

gtcgcangca cgcgtacgta agctcggaat tcggctcgag attactgtca tccagattga 60

tgaagctgct ctaagagaag gtttacctct gaggaagtct gaggaggctt tctatctaaa 120

ctgggctgtt cactcattta ggattaccaa ctgtggtgtg gaggacacta ctcagattca 180

cactcacatg tgctactcca acttcaatga catcattcac tcaatcatag acatggatgc 240

tgatgtgatc accattgaga actctagatc agacgagaag tt 282

<210> 2704
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2704

cgtcgcangc ncgcgtacgt nagctcggaa ttcggctcga ggagatgacc aaccaagatt 60

tgaaacatgt taccagattg ctttggctat caaggatgag gttgnggatc ttgagaaagc 120

tggtattact gtcatccaga ttgatgaggc tgcnctaaga gaaggtttac ctctgaggaa 180

gtctgaggag gctttctatc taaactgggc tgttcactca tttaggatta ccaactgtgg 240

tgtggaggac actactcaga tncacactca ca 272

<210> 2705
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2705

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag aagaagttca accttccaat 60

cctcccaacc accacaattg gatccttccc tcagactgtt gaactgagga gggtgcgtcg 120

tgaatacaag gctaacaaga tctcagagga ggagtatgtt agttcaatta aagaggaaat 180

ccgcaaagtt gttgaactcc aagagaatct tgatatcgat gtcctggtac acggggagcc 240

tgagaggaat gacatggtgg agtactttgg tgagcagttg tcaggctttg cctttacc 298

<210> 2706
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2706

nncgcatgca cgcgtacgta agctcggaat tcggctcgag aagaagttca accttccaat 60

cctcccaacc accacaattg gatccttccc tcagactgtt gaactgagga gggtgcgtcg 120

tgaatacaag gctaacaaga tctcagagga ggagtatgtt agttcaatta aagaggaaat 180

ccgcaaagtt gttgaactcc aagagaatct gcatatcgat gtcctggtac acggngagcc 240

tgagaggaat gacatggtgg agtactttgg tgagcagttg tcaggctttg cctttaccgt 300

taaggct 307

<210> 2707
<211> 452
<212> nucleic acid
<213> Glycine max

<400> 2707

ccacgcgtcc gctggaagca gatggctgat gctggaataa agtatattcc tagcaacacc 60

ttctcacttt acgatcaagt actggacaca acagccatgc tcggggcagt tccatctaga 120

tataattgga atggtgggga gattgggttt gatgtttact tctcaatggc aagagggaat 180

gcatctgtac cagctatgga aatgaccaag tggtttgaca ccaattacca ttacattgtt 240

cctgaattgg gtcctgatgt taagttctcc tatgcatcac acaaggctgt cgatgaattt 300

aaagaggcca aagttctggg agttaatact gtacctgtgc ttgtgggacc tgtatcctac 360

ttgttgctgt caaaaccagc taagggtgtt gaagaagtca ttttcccttc tttccctaat 420

tgacaagatc cttcctgtct acagggangt tt 452

<210> 2708
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2708

acgtcgcang cacgcgtacg taagctcgga attcggctcg agcaagtggt ttgacaccaa 60

ttnccattac attgttcctg aattgggtcc tgatgttaag ttctcctatg catcacacaa 120

ggctgtcgat gaatttaaag aggccaaagt tctgggagtt aatactgtac ctgtgcttgt 180

gggacctgta tcctacttgt tgctgtcaaa accagctaag ggtgttgaga agtcattttc 240

ccttctttcc ctaattgaca 260

<210> 2709
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2709

atcgcatgca cgcgtacgta agctcggaat tcggctcgag caacagccat gcttggggca 60

gttccatcta gatataattg gaatggtggg gagattgggt ttgatgttta cttctcgatg 120

gcaagaggga attcatctgt accagctatg gaaatgacca agtggtttga cacaaactat 180

cattacattg ttcctgaatt gggtccagat gttaagttct cctatnccat cacacaaggt 240

tgtggatgaa tacntngagg ctaaagttct gggaa 275

<210> 2710
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2710

ntnacgcnta cgtaagctcg gaattcggct cgagctagtc tcctactctc acccgcaaga 60

aaaaaaatgg catctcacat cgttggatac ccccgtatgg gtcccaagan agagctcaag 120

ttcgctctcg agtctttctg ggatggcaag agcagcgccg aggatttgca gaaggtgtct 180

tctgatctca gggcatccat ctggaagcag atggctgatg ctgggatcaa gtacatcccc 240

agcaacactt tctctcacta tgaccaggtt ctcgacgcca ccgccaccct cggtgccgtt 300

ccac 304

<210> 2711
<211> 341
<212> nucleic acid
<213> Glycine max

<400> 2711

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tccactcaga agcgaagaan 60

aagccacaga gaactagtct cctacttctc acccgcaaga naaaaatggc atctcacatc 120

gttggatacc cccgtatggg tcccaagaga gagctcaagt tcgctctcga gtctttctgg 180

gatggcaaga ncagcgccga ggatttgcag aaggtgtctt ctgatctcag ggcatccatc 240

tggaagcaga tggctgatgc tgggatcaag tacatcccca gcaacacttt ctctcactat 300

gaccaggttc tcgacgccac cgccaccctc ggtgccgttc c 341

<210> 2712
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2712

gtcgcnngca cgcgtacgta agctcgcgaa ttcggctcga ggcgaagaag aagccacaga 60

gaaccagtct cctactctct ctcacccaca agaaaaatgg catctcacat cgttggatac 120

ccccgcatgg gtcccaagag agagctcaag ttcgctctcg agtctttctg ggatggcaag 180

agcagcgccg aggatttgca gaaggtggct gctgatctca ggtcatccat ctggaagcag 240

atggctggtg ctgggatcaa gtacatcccc agcaacactt tctcgttcta tgaccagctg 300

ctcgacgcca ccgccaccct cg 322

<210> 2713
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 2713

ttgctccctc agaagcgaca cngaagccac agagcactag tctcctactc tcacccanca 60

aganaaaaat ggcatctcac atcgttggat acccccgtat gggtcccaag agagagctca 120

agttcgctct cgagtctttc tgggatggca agagcagcgc cgaggatttc agaaggtgtc 180

ttctgatctc agggcatcca tctggaagca gatggctgat gctgggatca agtacatccc 240

cagcaacact ttctctcact atgacanggt tctcgacgcc accggcaccc tcggtgccgt 300

tncaccaagt aggtggancg gcggcgag 328

<210> 2714
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 2714

angcacgcgt acgtaagctc ggaattcggc tcgagctctg cttcaacttg ctccctcaga 60

agcgaagaag aagccacaga gaaccagtct cctactctct ctcacccaca agaaaaatgg 120

catctcacat cgttggatac cccgcatgg gtcccaagag agagctcaag ttcgctctcg 180

agtctttctg ggatggcaag agcagcgccg aggatttgca gaaggtggct gctgatctca 240

ggtcatccat ctggaagcag atggctggtg ctgggatcaa gtacatcccc agcaacactt 300

tctcgttcta tgaccagctg ctcgacgcca ccgccaccc 339

<210> 2715
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2715

catgcacgcg tacgtaagct cggaattcgg ctccgagcac agagaaccag tctcctactc 60

tctctcaccc acaagaaaaa tggcatctca catcgttgga tacccccgca tgggtcccaa 120

gagagagctc aagttcgctc tcgagtcttt ctgggatggc aagagcagcg ccgaggattt 180

gcagaaggtg gctgctgatc tcaggtcatc catctggaag cagatggctg gtgctgggat 240

caagtacatc cccagcaaca ctttctcgtt ctatgaccag ctgctcgacg ccaccg 296

<210> 2716
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2716

ngtngcangc acgcgtacgt aagctcggaa ttcggctcga gtttgcagaa ggtgtcttct 60

gatctcaggg catccatctg gaagcagatg gctgatgctg ggatcaagta catccccagc 120

aacactttct ctcactatga ccaggttctc gacgccaccg ccaccctcgg tgccgtccac 180

caaggtacgg ctggcaccgg cggcgagatt gggtttgata cctacttcnc catggccaga 240

ggtaatgcta ccgtgccagc tatggagatg accaagtggt tcgacaccaa ctaccacnct 300

nttgtccc 308

<210> 2717
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2717

annttnncgt acgtaanctc ggaattcggc tcgagcttgc tccctcanan ncntgaanaa 60

gccacagaga actagtctcc taactctcac ccgcaagacn aaaaatggca tctcacatcg 120

ttggntaccc ccgtatnggt cccaagagag agcncaagtt cgctctcgag tctttctggg 180

atggcaagag cagcgccgag gatttgcaga aggtgtcttc tgatctcagg gcatccatct 240

ggaagcagat ggctgatgct gggatcaagt acatccccag caacactttc tctcactatg 300

accaggttct cgac 314

<210> 2718
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2718

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctccctcaga agcgaagaag 60

aagccacaga gaaccagtct cctactctct ctcacccaca agaaaaatgg catctcacat 120

cgttggatac ccccgcatgg gtcccaagan agagctcaag ttcgctctcg agtctttctg 180

ggatggcaag agcagcgccg aggatttgca gaaggtggct gctgatctca ggtcatccat 240

ctggaagcag atggctggtg ctgggatcaa gtacatcccc agcaacactt tctcgttcta 300

tgaccag 307

<210> 2719
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2719

acgcgtacgt aagctcggaa ttcggctcga ggcttcaact tgctccctca gaagcgaaga 60

agaagccaca gagaaccagt ctcctactct ctctcaccca caagaaaaat ggcatctcac 120

atcgttggat acccccgcat gggtcccaag agagagctca agttcgctct cgagtctttc 180

tgggatggca agagcagcgc cgaggatttg cagaaggtgg ctgctgatct caggtcatcc 240

atctggaagc agatggctgg tgctgggatc aagtacatcc ccagcaacac tttctcgttc 300

tatgaccact gctcgacg 318

<210> 2720
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2720

gcacgcgtac gtaagctcgg aattcggctc gagctcagaa ncgaanaaga agccacncna 60

gaactagtct cctactctca cccgcaanaa aaaaatggca tctcacatcg ttcngatacc 120

cccgtatggg tcccaagaga gagctcaagt tcgctctcga gtctttctgg gatggcaaga 180

gcagcgccga ggatttgcag aaggtgtctt ctgatctcag ggcatccatc tggaagcaga 240

tggctgatgc tgggatcaag tacatcccca gcaacacttt ctctcactat gaccaggttc 300

tcgacgccac cgncaccctc ggtn 324

<210> 2721
<211> 331
<212> nucleic acid

<213>	Glycine max

<400>	2721

nncncnngca tncgtacgta agctcggaat tcggctcgag cggctcgagt tcaacttgct	60

ccctcagaag cgaagaagaa gccacagaga actagtctcc tactctcacc cgcaagaaaa	120

aaatggcatc tcacatcgtt ggataccccc gtatgggtcc caagagagag ctcaagttcg	180

ctctcgagtc tttctgggat ggcaagagca gcgccgagga tttgcagnag gtgtcttctg	240

atctcagggc atccatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca	300

acactttctc tcactatgac caggttctcg n	331

<210>	2722
<211>	327
<212>	nucleic acid
<213>	Glycine max

<400>	2722

gttgcangca cgcgtacgta agctcngaat tcggctcgag gccacagaga ctccagtctc	60

ctactctctc tcacccanaa gananntggn atntcacntc gttggatacc cccgcatggg	120

tcccaagana gagctcnagt tcgctctcga gtctttctgg gatggcnagn ncngcgccga	180

ggatttggca naaggtggct gctgatctca ggtcatccat ctcgaagcag atggctggtg	240

ctgggatcaa gtacntcccc agcaacactt tctcgttcta tgaccagctg ctcgacgcca	300

ccgccaccct cggtgccgtc cccccag	327

<210>	2723
<211>	316
<212>	nucleic acid
<213>	Glycine max

<400>	2723

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggctgatgct gggatcaagt	60

acatccccag caacactttc tctcactang accnggtttc tcgacgccac cgcnaccctc	120

ggtgccgttc caccaaggna cggctggacc ggcggcgaga ttgggtttga tacctacttc	180

tccatggcca nangtaatgc taccgtgcca gctatggaga tgaccaagtg gttcganacc	240

aactancact ttattgtccc tgaatgggcn ctgatgtgaa cttcacctat gcttctcaca	300

aggcngctga tgaana 316

<210> 2724
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2724

cgntnnnaag cgtacgtnag ctcggaattc ggctcgagct tgctccctca gaagcgaaga 60

agaagccaca gagaaccagt ctcctactct ctctcaccca caagaaaaat ggcatctcac 120

atcgttggat accccgcat gggtcccaag agagagctca agttcgctct cgagtcttct 180

gggatggcaa gagcagcgcc gaggatttgc agaaggtggc tgctgatctc aggtcatcca 240

tctggaagca gatggctggt gctgggatca agtacatccc cagcaacact ttctcgttct 300

atgaccagct gctcgacgcc 320

<210> 2725
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2725

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctcagaagcg aagaagaagc 60

cacagagaac tagtctccta ctctcacccg caagaaaaaa atggcatctc acatcgttgg 120

atacccccgt atgggtccca agagagagct caagttcgct ctcgagtctt tctgggatgg 180

caagagcagc gccgaggatt tgcagaaggt gtcttctgat ctcagggcat ccatctggaa 240

gcagatggct gatgctggga tcaagtacat ccccagcaac actttctctc actatgacca 300

g 301

<210> 2726
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2726

gtngcatgcn cgcgtacgta agctcggnat tcggctcgan ctcgagccga atcggctcga 60

gagaaaaatg gcatctcaca tcgttagata cccccgcatg ggncccaaga gagagctcaa 120

gttcgctctc gagtctttct gggatggcaa gagcagcgcc gaggatttgc agaaggtggc 180

tgctgatctc aggtcatcca tctggaagca gatggctggt gctgggatca agtacatccc 240

cagcaacact ttctcgttct atgaccagct gctncgacgc caccgccacc ctcggtgccg 300

tcccccccan gt 312

<210> 2727
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2727

nncgtctcan gcacgcgtac gtnagctcnn naattcggct cgaggaacta gtctcctact 60

ctcanccnca ananaataat ggcatctgca catgcgntgg ataccccсgt atgggtccca 120

agagnnanct caagttcgct ctcgagtctt tctgggatgg caagagcacc gccgaggatt 180

tgcagaaggt gtcttctgat ctcagggcat ccatctggaa gcagatngct gatgctggga 240

tcaagtacat ccccancaac actttctctc actatgacca ggtnctcgac gccnccgcca 300

t 301

<210> 2728
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2728

angtcgcang cacgcgtacg taagctcgga attcggctcg agtgcttcaa cttgctccct 60

cagaagcgaa gaagaagcca cagagaacca gtctcctact ctctctcacc cacaagaaaa 120

atggcatctc acatcgttgg ataccccсgc atgggtccca agagagagct caagttcgct 180

ctcgagtctt tctgggatgg caagagcagc gccgaggatt tgcagaaggt ggctgctgat 240

ctcaggtcat ccatctggaa gcagatggct ggtgctggga tcaagtacat ccccagcaac 300

actttctcgt tctatg 316

<210> 2729
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 2729

natctcangc aagcgtacgt attctcgnna ttnggcnacg aggcttcaac ttgctccctc 60

agaancgaag aagaagnnac agananctan tctcctactc tcacccgcaa gaanaaaatn 120

gcatctcaca tcgttggata cccccgtatg ggtcccaaga gagagctcaa gttcgctctc 180

gagtctttct gggatggcaa gagcagcgcn gaggatttgc agaaggtgtc ttctgatctc 240

agggcatcca tctggaagca gatggctgat gctgggatca agtacatccc cagcaacact 300

ttctctcata tgcaccaggt tctcgaagcc 330

<210> 2730
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2730

cccgtatggg tcccaagaga gagctcaagt tcgctctcga gtctttctgg gatggcaaga 60

gcagcgccga ggatttgcag aaggtgtctt ctgatctcag ggcatccatc tggaagcaga 120

ggctgatgct gggatcaagt acatccccag caacactttc tctcactatg accaggttct 180

ngacgcnacc gncannctcg gtgntgtncc atnaaggnan gnntatanng gttgtnatnn 240

nggntnnann nttntnttcca ngttntgcag g 271

<210> 2731
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2731

tcccgtacgt nagctcggaa ttcggctcgn ggcttcanct tgctccctca gaagcgaaga 60

agaagccaca gagaactagt ctcctactcn canccncnag anaaaaatgg catctcacat 120

cgttggatac ccccgtatgc gtcccaagan agagctcaag ttcgctctcg agtctttctg 180

ggatgcaaga gcagcgccga ggatttgcag aaggtgtctt ctgatctcag ggcatccatc 240

tggaagcaga tggctgatgc tgggatcaag tacatcccca gcaacacttt ctctcactat 300

gaccaggttc tcgacgca 318

<210> 2732

<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2732

acangcatgc acgngtacgt aagctcggaa ttcggctcga gctctgcttc aacttgctcc 60

ctcagaagcg aagaagaagc cacagagaac tagtctccta cttcttcacc cgcaaganaa 120

aaatggcatc tcacatcgtt ggataccccc gtatgggtcc caaganagag ctcaacttcg 180

ctctcgagtc tttctgggat ggcaagagca gcgccgagga tttgcagaag gtgtcttctg 240

atctcagggc atccatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca 300

acacttt 307

<210> 2733
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2733

ncgtcgcatg cacgcgtacg tnagctcgga attcggctcg agcttcaact tgctccctca 60

gaagcgaaga agaagccaca gagaaccagt ctcctactac tactctcacc cacaagaaaa 120

atggcatctc acatcgttgg atacccccgc atgggtccca agagagagct caagttcgct 180

ctcgagtctt tctgggatgg caagagcagc gccgaggatt tgcagaaggt ggctgctgat 240

ctcaggtcat ccatctggaa gcagatggct ggtgctggga tcaagtacat ccccagcaac 300

actt 304

<210> 2734
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 2734

acacnagnaa atantctgca ngcacgcgta cgtaagctcg ncaanncggc tcgnggcttc 60

aacttgctcn ctcagancnc gaagangaag ccacagagna ccagtctccn nctctntntc 120

acccacaaga naaatgncat ctcacatgcn tggatanccc cgcatgggtc ccnaganaga 180

gctcaagttc gcnctcgagt ctttctggga tggcaagagc agcgccgagg atttgcagaa 240

ggtggctgct gatctcaggt catccatctg gaagcagatg gctggtgctg ggatcaagta 300

catccccagc aacactttct cgttctatga cca 333

<210> 2735
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2735

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcttgctccc tcagaagcga 60

agaagaagcc acagagaact agtctcctac tctcacccgc aagaaaaaaa tggcatctca 120

catcgttgga tacccccgta tgggtcccaa gagagagctc aagttcgctc tcgagtcttt 180

ctgggatggc aagagcagcg ccgaggattt gcagaaggtg tcttctgatc tcagggcatc 240

catctggaag cagatggctg atgctgggat caagtacatc cccagcaaca ctttctctc 299

<210> 2736
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 2736

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gctcagaagc gaaganenna 60

gccacagaga actagtctgc ctactctcac ccgcaagana aaaatggcat ctcacatgcg 120

ttggataccc ccgtatgggt cccaagagag agctcaagtt cgctctcgag tctttctggg 180

atggcaagag cagcgccgag gatttgcaga aggtgtcttc tgatctcagg gcatccatct 240

ggaagcagat ggctgatgct gggatcaagt acatccccag caacactttc tctcactatg 300

accaggttct tcgacgcnac gccacctcgg tgc 333

<210> 2737
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2737

agtcgcangc acgcgtacgt aagctcgnan attcggctcg agttgctccc tcagcagcna 60

agaagaagcc acagagaact agtactcnct antctcaccc gcaagannna aatggcatct 120

cacatcgntg gatacccccg tatgggtccc aagagagagc tcnagttcgt nctcgagtct 180

ttctgggatg gcaagagcag cgccgaggat ttgcagaagg tgtcttctga tctcagggca 240

tccatctgga agcagatggc tgntgctggg atcaagtaca tccccagcaa cactttctct 300

nactatggcc agttctcnac 320

<210> 2738
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2738

gtcgcangca cgcgtacgta agctcggaat tcgggctcga gctccctcag aagcgaagaa 60

gaagccacag agaaccagtc tcctacttct ctctcaccca caagaaaaat ggcatctcac 120

atcgttggat acccccgcat gggtcccaag agagagctca agttcgctct cgagtctttc 180

tgggatggca agagcagcgc cgaggatttg cagaaggtgg ctgctgatct caggtcatcc 240

atctggaagc agatggctgg tgctgggatc aagtacatcc ccagcaa 287

<210> 2739
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2739

gttgcatgtn agcgtacgta agcttcggaa ttctggtnnn ggatttggat cgagcttnnt 60

ccctcagnag cgnagaagaa gccncagaga actagtctcn tactctcacc cgcaagaaaa 120

aaatggcatc tcacatcgtt ggataccccc gtatgggtcc caagagagag ctcaagttcg 180

ctctcgagtc tttctgggat ggcaagagca gcgccgagga tttgcagaag gtgtcttctg 240

atctcagggc atccatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca 300

acactt 306

<210> 2740
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2740

gtcgcangca cgcgtacgta agctcggaat tcggctcgag aacttgctcc ctcagaagcg 60

aagaagaagc cacagagaac cagtctccta ctctctctca cccacaagaa aaatggcatc 120

tcacatcgtt ggataccccc gcatgggtcc caagagagag ctcaagttcg ctctcgagtc 180

tttctgggat ggcaagagca gcgccgagga tttgcagaag gtggctgctg atctcaggtc 240

atccatctgg aagcagatgg ctggtgctgg gatcaagtac atccccagca a 291

<210> 2741
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 2741

gcacgcgtac gtaagctcgg aattcggctc gagatcttgc tccctcagaa gcgaagaaga 60

agccacagag aactagtctc ctactctcac ccgcaagaaa aaaatggcat actgcacatt 120

cgttggatac ccccgtatgg gtcccaagan agagctcaag ttcgnnctcg agtctttctg 180

ggatggcaag cgcagcgccg aggatttgca gaaggtgtct tctgatctca gggcatccat 240

ctggaagcag atggctgatg ctgggatcaa gtacatcccc agcaacactt tctctcacta 300

tgaccagttc tcgacgccac gn 322

<210> 2742
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2742

angcacgcgt acgtnagctc ggaattcggc tcgagcttgc tccctcagaa gcgaagnaga 60

agccacagag aactagtctc ctactctaca cccgcaagaa aaaaatggca tctacacatc 120

gttggatacc cccgtatggg tcccaagaga gagctcaagt tcgctctcga gtctttctgg 180

gatggcaaga gcagcgccga ggatttgcag aaggtgtctt ctgatctcag ggcatccatc 240

tggaagcaga tggctgatgc tgggatcaag tacatcccca gcaacacttt ctctcatang 300

accaggttct 310

<210> 2743
<211> 304
<212> nucleic acid

<213> Glycine max

<400> 2743

agttgcangc acgcgtacnt aagctcggaa ttcggctcga gtcagaagcg aagaagaagc 60

cacagagaac tagtcnncnt actctcaccc gcaagaaana aatngccatc tcanatgcgt 120

tggatncccc cgtatgggtc ccaagagaga gctcaagttc gctctcgagt ctttctggga 180

tggcaagngc ancgccgagg atttgcagaa ggtgtcttct gatctcaggg catccatctg 240

gaagcagatg gctgatgctg ggatcaagta catccccagc aacactttct ntcactatga 300

ccag 304

<210> 2744
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2744

tcgcangnac ncntcggaat tcggctcgag cttgctccct cagaagcgaa gaagaagcca 60

cagagaacca gtctcctact ctctctcacc cacaagaaaa atggcatctc acatcgttgg 120

ataccccgc atgggtccca agagagagct caagttcgct ctcgagtctt tctgggatgg 180

caagagcagc gccgaggatt tgcagaaggt ggctgctgat ctcaggtcat ccatctggaa 240

gcagatggct ggtgctggga tcaagtacat ccccagc 277

<210> 2745
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2745

gtngcangca cgcgtacgta agctcggaat tcggctcgag ctccctcaga agcgaagaag 60

aagccacaga gaactagtct cctactctca cccgcaagan aaaaatggca tctcacatcg 120

ttggataccc ccgtatgggt cccaagagng agctcaagtt cgctctcgag tctttctggg 180

atggcaagag cagcgccgag gatttgcaga aggtgtcttc tgatctcagg gcatccatct 240

ggaagcagat ggctgatgct gggatcaagt acatccccag caacactt 288

<210> 2746

<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2746

gttgcangca cgcgtacgta agctcggaat tcggctcgag cagaagcgaa gaagaagcca 60

nagagaacta gtctcctacn nttcacccgc aagaaaaaat ggnatctcac atcgttggat 120

acncccgtat gggtnnccaa gagagngnna agttcgntct cgagtctttc tgggatggca 180

agagcagcgc cgaggatttg cagaaggtgt cttctgatct cagggcatcc atctggacgc 240

agatggctga tgctgggatc aagtacatnn ncagcaanac tttctctcan tatgaccagg 300

ttctcgacgc naccgcca 318

<210> 2747
<211> 331
<212> nucleic acid
<213> Glycine max

<400> 2747

gcaaantcgc tgnangcnta cgtnagctcg ganttcggat ngagctcgag ccgctgcttc 60

aacttgctac ctcagaagcg aagaagaagc cacagagaac cagtcnccta ctctctctca 120

cccacaagaa naatgggatc tcacatcgtt ggataccccc gcatgggtcc caagagagag 180

ntcnagttcg ctctcgagtc tttctgggat ggcaagngcn gcgccgagga tttgcagaag 240

gtggctgctg atctcaggtc atccatctgg aagccagatg gctggtgctg ggatcaagta 300

catccccagc aacactttct cgtttatgnc c 331

<210> 2748
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2748

aatcgcangc aagcgtacgt aagctcggaa ttcggctcga gctctgcttc aacttgctcc 60

ctcagaagcg aagaagaagc cacagagaac cagtctccta ctctctctca cccacaagaa 120

aaatggcatc tcacatcgtt ggataccccc gcatgggtcc caagagaagc tcaagttcgc 180

tctcgagtct ttctgggatg gcaagagcag cgccgaggat ttgcagaagg tggctgctga 240

tctcaggtca tccatctgga agcagatggc tggtgctggg atcaagtaca tccccagcaa 300

catttct 307

<210> 2749
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2749

gtcgcangna cgcgtacgta agctcggaat tcggctcgag cttgntccct cagaagcgaa 60

gaanaancca cagagaanta gtctnctact ctgcacccgc aanaaaaaaa tggcntctca 120

catgcgttgg atacccccgt atgggtccca aganagagct caagttcgct ctcgagtctt 180

tctgggatgg caagagcagc gccgaggatt tgcagaaggt gtcttctgat ctcagggcat 240

ccatctggaa gcagatggct gatgctggga tcaagtacat ccccagcaac actttctctc 300

an 302

<210> 2750
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2750

cangcacgcg tacgtnagct cggaattcgg ctcgagnctt gctccctcag aagcgaagaa 60

gaagccacag agaaccagtc tcctactctc tctcacccac aaganaaatg gcatctcaca 120

tcgttggata cccccgcatg ggtcccaaga nagagctcaa gttcgctctc gagtncttct 180

gggatggcaa gagcagcgcc gaggatttgc agaaggtggc tnctgatctc aggtcatcca 240

tctggnagca gatggctggt gctgggatca agtacatccc cagcaac 287

<210> 2751
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2751

agtcncangc acgcgtacgt aagctcggaa ttcggctcga gctggcttca anttgctccc 60

tcagaagcga agaagaagcc acagaganct ngtctcctac tctcacccgc aaganaaaaa 120

tggcatctca catcgttgga tacccccgta tgggtcccaa ganagagctc aagttcgctc 180

tcgagtcttt ctgggatggc aagagcagcg ccgaggnttt gcagaaggtg tcttctgntc 240

tcagggcatc catctggaag cagatggctg atgctgggat caagtacatc cccagcaaca 300

<210> 2752
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2752

ncttncacgc acgcgtacgt nagctcggaa ttcggctcgg gctccctcag aagcgaagaa 60

gaagccacag agaaccagtc tcctantcnc tctcacccac aagaaaaatg gcatctcaca 120

tcgttggata cccccgcatg ggtcccaaga nagagctcaa gttcgctctc gagtctttct 180

gggatggcaa gagnagcgcc gaggatttgc agaaggtggc tgctgatctc aggtcatcca 240

tctggaagca gatggctggt gctgggatca agtacatcnc cagcn 285

<210> 2753
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 2753

tgctgtaana nanaangtng cgtgcacgcn tacgtaaagc tcgggaattc ggctcgagct 60

ggnttcaant tggntcctca naagcgaaga agaagccaca gagaaccagt ctcntantnt 120

ctntcaccca caagaaaaat ggcntctcac atcgttggat acccccgcat gggtcccaag 180

anagagntca agttcgntnt cgagtctttc tgggatggca agancagcgc cgaggatttg 240

cagaaggtgg ctgntgatnt caggtcatcc atntggaagc agatggctgg tgntgggatc 300

aagtacatcc ccagcaanac tttntc 326

<210> 2754
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2754

ncgtcgcang cacgcgtacg taagctcgga attcggctcg aggctccctc agaagcgaag 60

aagaagccac agagaaccag tctcctactc tctctcaccc acaagaaaaa tggcatctca 120

catcgttgga taccccgca tgggtcccaa gagagagctc aagttcgctc tcgagtcttt 180

ctgggatggc aagagcagcg ccgaggattt gcagaaggtg gctgctgatc tcaggtcatc 240

catctggaag cagatggctg gtgctgggat caagtacatc c 281

<210> 2755
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2755

gtcgcangca cgcgtncgac gantacgtna nctcggnntt nggntccncg ctnacatggg 60

catngnaaac tgtttacgag tgagtntcct angcncancc gcaagaaaaa aatggcatct 120

cacatcgttg gataccccg natgggttcc caagagagag ctcaagttcg ctctcgagtc 180

tttctgggat ggcaagagca gcgccgagga tttgcagaag gtgtcttctg atctcagggc 240

atccatctgg aagcagatgg ctgatgctgg gatcaagtac atccccagca acatttctct 300

cat 303

<210> 2756
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2756

cgtcgcatgc acgcgtacgt nagctcggna ttcggctcgn gcggctcgng gcttcaactt 60

gctccctcag aagcgaagaa gaagccacag agaactagtc tcctaacctc acccgcaaga 120

naaaaatggc atctcacatc gttggatacc cccgtatggg tcccaagaga gagctcaagt 180

tcgctctcga gtctttctgg gatggcaaga gcagcgccga ggatttgcag aaggtgtctt 240

ctgatctcag ggcatccatc tggaagcaga tggctgatgc tgggatcaag tacatcccca 300

<210> 2757
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2757

tngcangcac gcgtacgtaa gctcggaatt cggctcgagc tgcttcaact tgctccctca 60

gaagcgaaga agaagcnaca gaggnccagt ctcctactct ctctcaccca caagaaaaat 120

ggcatctcac atcgttggat acccccgcat gggtcccaag agagagctca agttcgctct 180

cgagtctttc tgggatggcn ngagcagcgc cgaggatntg cagaaggtgg ctnctgatct 240

caggncatcc atctggaagc aganggctgg tgcngggatc aagtacatcc ncagcnacn 299

<210> 2758
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2758

tnncatgcac gcgtacgtaa gctcggaatt cggctcgagg ctccctcnga agcgaagaag 60

aagccacaga gaactagtcn nctantctca cccgcaagaa naaaatgngc atcttcacat 120

ncgttggata cccccgtatg ggtcccaaga gaganctcaa gttcgctctc gagtctttct 180

gggatggcaa gagcagcncc gaggatttgc agaaggtgtc ttctgatctc agggcatcca 240

tctggaagca gatggctgat gctgggatca agtacatccc cagcaacact ttctncgcan 300

tntgaccagg 310

<210> 2759
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2759

acgcatgnag cgtacgtnag ctcggnattc ggctcgagct gcttcaactt nctccctcag 60

aagcgaagaa gaagccacag agaactantc tcctactctc acccgcacta aaanaatggc 120

atctcacatc gttggatacc cccgtatngg ncccaagana gagctcaagt tcgctctcga 180

gtctttctgg gatngcnnga ncagngccgn ggatttgcan caggtgtctt ctgatctcan 240

ggcatccatc tggnnacaga tggctgntgc tgggatcaag tncatccnca ncaacacttt 300

ctctcactag nncaggtt 318

<210> 2760
<211> 293
<212> nucleic acid

<213> Glycine max

<400> 2760

nncgtcgcan gcacgcgtac gtaagctcgg taattcggct cgagnaactt gctccctcag 60

aagcgaagna gaagccacag agnactagtc tcctacttct cacccgcnag anaaanntgg 120

catctcacat cgttggatac ccccgtatgg gtcccaagag agagctcaag tncnctctcn 180

agtctttctg ggatggcnag agcagcgccg aggatttgca gaaggtgtct nctnatctca 240

gggcatccat ctggaagcng atggctgatg ctgggatcaa gtacatcccc agc 293

<210> 2761
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2761

ngntcangca cncgtacgtn agctcggaat tcnnctcgan gctccctcag aagcgaagaa 60

nnagccacag agaactngnc tcctactctc acccgcaaga aaaaaatggc acctcanntc 120

gttggatacc cccgtatgng tcccaagagg gagctcaagt tcgctctcga gtcttctggg 180

atggcaagag cagcgccgag gatttgcaga aggtgtcttc tgatctcagg ggcatccatc 240

tggaagcaga tggctgatgc tgggatcaag tacatcccca gcancacttt ctctcactat 300

gn 302

<210> 2762
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2762

gatgctngca cgcgtacgtn agctcggaat tnggctcgag cagagaacta gtctcctact 60

ctcacccgca agaaaaaaat ngnatctcac atcgttggat acccccgtat gggtcccaag 120

agagagcnca agttcgctct cgagttcttt ctnggatggc aagngcagct ccgaggattt 180

gcagaaggtg tcnnntgatc tcagggcntc catctggaag cagatggctg atgctgggat 240

caagtacatc cccngcaaca ntttctcnna ctcntgacaa ggttctcgac gcnaccgcga 300

accctcggtg n 311

<210> 2763
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2763

cncgtacgta agctcggaat tcggctcgag cnaagaanaa gccacagcag anccagtctc 60

ctantctctc tcanccacaa nanaaatngc atcncacatc gtnggatacc cccgcatggn 120

tacccaanag agagnncaag ttacgctctc gagtctttct gggatggcaa gagcagcgcc 180

gaggatttgc agaaggtggc tgctgntctc aggtcatccn tctggaagca gatggctggt 240

gctgggatca agtacatccc cancaacact ttctcgttct atgaccagct gctcgacg 298

<210> 2764
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2764

tcnangcacg cgtacgtnaa gctcggaatt tcggaattcg gctcgagact tgctccctca 60

gaagcgaaga agaagccaca gagaaccagt ctcctactct ctctcaccca caagaaaaat 120

ggnatctcac atcgttggat accccgcat gggncccaag agagagctcn agttcgntct 180

cgagtctttc tgggatggna anagcancgn cgangntttg canaangngg ctgctggtct 240

cangncatcc atctggaanc ngatggctgg tgctgggatc nagtacatcc ccagcaacac 300

<210> 2765
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 2765

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcttcaactt gctccctcag 60

aagcgaagaa gaagccacag agaactagtc tccttacttc tcacccgcaa ganaaaaatg 120

ggcatctcac atcgttggat accccgtat gggtcccaag anagagctca agttcgctct 180

cgagtctttc tgggatggca agagcagcgc cgaggatttg cagaaggtgt cttctgatct 240

cagggcatcc atctggaagc agatggctga tgctgggatc aatacatccc cagcaacatt 300

tctctcatat gaccagttct cggacgccac 330

<210> 2766
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2766

ttgangcacg cgtacgtnag ctcggaattc ggctcgagct tcaacttgct ccctcagang 60

cgaagaagan gccacagaga acnagtctcc tactctcacc cgcaaganaa aaatggcatc 120

tccacatcgt tggatacccc cgtatgggtn cccaaganag agctcaagtt cgctctcgag 180

tctttctggg atggcaagag cagcgccgag gatttgcaga aggtgtcttc tgatctcagg 240

gcatccatct ggaagcagat ggctgatgct gngantcaag tacatcccca gcaacacttt 300

ctctcact 308

<210> 2767
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2767

gttnaatgca cgcgtacgta agctcggaat tcggctcgag gctccctcag aagcgaagaa 60

gaagccacag agaaccagtc tcctactctc tctcacccac aanaaaaatg gcatctcaca 120

tcgttggata cccccgcatg ggtcccaaga gagagctcaa gttcgctctc gagtctttct 180

gggatggcaa gagcagcgcc gaggatttgc agaaggtggc tgctgatctc aggttcatcc 240

atctggaagc agatggctgg tgctggggat caagtacatc cccagcaaca cttctcgttc 300

tatgaccag 309

<210> 2768
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2768

ctanaactnn acnccctcag aagcgaagaa gaagccacag agaactagtc tcctactctc 60

acccgcaaga naaaaatggc atctcacatc gttggatacc cccgtatggg tcccaagaga 120

gagctcaagt tcgtctcgag tcttnctggg atggcaagag cagcgccgag gatttgcaga 180

aggtgtcttc tgatctcagg gcatccatct ggaagcagat ggctgangct gggntcaagt 240

acatccc 247

<210> 2769
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2769

gcacgcgtac gtaagctcgg aattcggctc gagctccctc agaagcgaag aanaagccac 60

agagaactag tctnctactc tcannccgca agaaaaaaat ggcatctcac atcgttggat 120

acccccgtat gggtcccaag agagagctca agttcgctct cgagtctttc tgggatggca 180

agagcagcgc cgaggatttg cagaaggtgt cttctgatct cagggcatcc atctggaagc 240

agatggct 248

<210> 2770
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2770

ncgttgcang cacgcgtacg tnagctcgga attnngctcg agtctgcttc aacttgctcc 60

ctcagaancg aagaagaagc cacagaganc tagtctccta ctctcacccg caagaaaaaa 120

atggcatctc acatcgttgg ntaccccgt atgggtccca agaganagct caagttcgct 180

ctcgagtctt tctgggatgg cnagngcagc gccgaggatt tgcagaaggt gtcttctgat 240

ctcagggcat ccatctggaa gcagatggct gangctggga tcan 284

<210> 2771
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 2771

anaancaatg caccgtacnt aantcggntc natgncgagc ngaattcggc tcgagctctg 60

cttcaacttg ctcccatnga agcgaanaag aagccacaga nnactantct cctantctca 120

cncgcaagan aanaatggca nctcacatgc gttggatacc cccntatggg tcccaagaga 180

gagctcaagt tcgctctcga gtctttctgg gatngcaaga gnagcgccga ggatttgcng 240

aaggngtctt ctgatctcag ggcatccatc tggnagcana tggctgatgc tnggancaag 300

tacatcccca gcaacatttc tctcatagn 329

<210> 2772
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2772

tgncgcntac ntaagnncgg aattcggctc gnggcgaaga agaagccaca gagaaccagt 60

ctcctactct ctctcaccca caagaaaaat ggcatctcac atgcgttgga tacccccgca 120

tgggtaccca agagagagct caagttcgct ctcgagtctt tctgggatgg caagagcagc 180

gccgaggatt tgcagaaggt ggctgctgat ctcaggtcat ccatnctgga agcagatggc 240

tggtgctggg atcaagtaca tcccnagcaa cacttctcgn tctatgacca gctgcnnacg 300

cc 302

<210> 2773
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2773

gcacgcgtac gtaagctcgg aattcggctc ganctcgagc cgattcggct cgagttgctc 60

cctcagaagc gaagaaacng ccacagagaa ccagtctcct actctctctc aaccacaaga 120

aaaatggcat ctcacatcgt tggatacccc cgcatgggtc ccaaggagag ctcaagttcg 180

ctctcgagtc tttctgggat ggcaagagca gcgccgagga tttgcagaag gtggctgctg 240

atctcaggtc atccatctgg aagcagatgg ctggtgctgg g 281

<210> 2774
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2774

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctgcttca acttgctccc 60

tcagaagcga agaagaagcc acagagaact agtctcctac tctcacccgc aagaaaaaaa 120

tggcatctca catcgttgga tacccccgta tgggtcccaa gagagagnnc aagttcgctc 180

tcgagtcttt ctgggatggc aagagcagcg ccgaggattt gcagaaggtg tcttctgatc 240

tcagggcacc atctggaagc agatggctga tgctgggatc aagtac 286

<210> 2775
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2775

cncngcacnc gtacgtaagc tcggaattcg gctcgagctt gctccctcag angcgaagaa 60

gaagccacag agaantagtc tcctactctc acccgccaag anaaaaatgg cattctcaca 120

tccgttggat acccccgtat gggtcccaag agagagctca agttcgctct cgagtcttct 180

gggatggcaa gnncagcgcc gaggatttgc agaaggtgtc tctgatctca gggcatccat 240

ctggaagcag atggctgatg ctgggatcaa gtacatcccc agcaacattt ctctcatatg 300

accaggttct 310

<210> 2776
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2776

tngcangcac gcgtacgtaa gctcngaatt cngcnccgag ctctgcttca acttgctccc 60

tcagaancga agaagaagcn acagagaact agtctcctac tctccacccg caagaaaaaa 120

atggcatctc acatcgttgg atacccccgt atgggtccca agagagagct acaagttcgc 180

tctcgagtct ttctgggatg gcaagagcag cgccgaggat ttgcagaagg tgtcttctga 240

nctnagggca tccatctgga agcagatggc nnatgctggg atcattacat ccccagcaa 299

<210> 2777
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2777

cttgctcnnt naganncgaa gaagaagcca cagaggacta gtctncntac tgctcacccg 60

caagaaaaaa atggcatctc anatccgttg gataccccccg tatgggtcnc aanagagagc 120

tcaagttngc tgctcgagtc tttctgggat ggcaatagca gngccganga tttgcagaag 180

gtgtcttctg atctcagggc atccatctgg aatcagatgg ctgatgcngg gatcaagtnc 240

atccccagca aca 253

<210> 2778
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2778

gcaaangcac gcgagacgta anctcggaat tcggctcgag naacttgntc cctcagnagc 60

gaagaagaag cnacananaa ctagtctcct acncncaacc gnaagaaaaa natggcatct 120

cacatcgttg gatacccccg tatnggtngc aanagagagc tcaagttcgc tctcgagtct 180

tnctgngatg gnaagannag cgccgaggat ttgcagaagg tgtcttctga tctcagggca 240

tccatctgga agcagatggc tangctggga tcaagtacat cccangca 288

<210> 2779
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2779

aaatnctana agtcgcangc acgcgnacgt aanctcggaa ntcggctcga gnaacttgct 60

ccctcagaag cgaagaagaa gccacanaga actagtctcc tactgctcac ccgcnagaaa 120

aaaatggcat ctncacatnc gttggatanc cccgnatgng ngcccaagan agagctcaag 180

ttcgctctcg agtctttctg ggatggcagn agcagcgccg aggatttgca gaaggtgtct 240

tcnganctca gggcatccat ctngaagcag atngctgatg ctgggatcaa gnacatctcc 300

aggaacactt tctctnactn 320

<210> 2780
<211> 249
<212> nucleic acid

<213> Glycine max

<400> 2780

ctgcntcaac ttgctccctg caganncgaa ncaagaagcc acagagnact agtctnccta 60

ctctcacccg caananaaaa atggcatctc acatncgttg gatanccccg tatgggtccc 120

aaganagagn tcaagttcgc tctcgagtct ttctgggatg gnaagagcag cgccgaggat 180

ttgcagaagg tgtnttctga tctcagggna tncatctgga agnagatggc tgatgntggg 240

ntcaagtac 249

<210> 2781
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2781

acggcacang nacgtaanct cggaattcgg ctcgagcann cttgctccct cagaagcgaa 60

gaagaagcca cagagaacta gtctcctact nctcacccgc aagaaaaaaa tggcatctca 120

catacgntgg ataccccсgn atgggtccca agagagagct caagttcgct ctcgagtctt 180

tctgggatgg caagagcagc gccgaggatt tgcagaaggt gtctcngatc tcagggcatc 240

catctggaag cagatggctg atgctgggat nagtacannc ccagcaacat ttctctcata 300

<210> 2782
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2782

gtcgcangca cgcgtaacgt naagctncgg taattcggcn cgaggccaca gagaactagt 60

ctncctactc tcnnccgcaa gaaaaaaatg gcatctcaca tcgttggata cccccgtatg 120

ggtcccaaga gagagctcaa gttcgctctc gantctttct gggatggcaa gagcagcgcc 180

gaggatttgc agaaggtgtc tctgatctca gggcatccat ctggaagcag atgctgatgt 240

ggtcaagnac tcccgcacan tt 262

<210> 2783
<211> 242
<212> nucleic acid

<213> Glycine max

<400> 2783

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc aacttgctcc ctcagaagcg 60

aagaagaagc cacagagaac cagtctccta ctctctctac acccacaaga aaaatggcat 120

ctcacatcgt tggatacccc cgcatgggtc ccaagagaga gctcaagttc gctctcgagt 180

ctttctggga tggcaagagc agcgccgagg atttgcagaa ggtggctgct gatctcaggt 240

ca 242

<210> 2784
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2784

ncgcntgcac gcgtacgtaa gctcggaatt cggctcgaga acttgctccc tcagaagcga 60

agaagaagcc acagagaact agtctcctac tcttcacccg caagaaaaaa atggcatctc 120

acatcgttgg ataccccgt atgggtccca agagagagct caagttcgct ctcgagtctt 180

tctgggatgg caagagcagc gccgaggatt tgcagaaggt gtcttctgat ctcagggcat 240

ccatctgnan canatggctg atncngggnt ncagtacatc cccagcaaca tttcttctca 300

tatgacca 308

<210> 2785
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2785

cttgctccct ccagaagacg aagaagaagc cacagagaat agttctccta ctctncaccc 60

gnaaganaaa acatggcatc tcacatcgtt ggatacccc gtatgggtcc caagagagag 120

ctcaagttcg ctctcgagtc tttctgggat ggcaagagca gngccgagga tttgcagaag 180

gtgtctctga tctcagggca tcccatctgg nagcagatgg ctgatgtggg atnngtacat 240

cccagcaaca tttctcncat cngacangtt ctcgacg 277

<210> 2786

<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2786

tatnaacttg ctcnntcaga ncgcgaagaa gaagncacag agaancnagt ctcctantnc 60

tcacccgnaa gnnaaaaatg ggcatnctcn catcgttgga taaccccgt atgggtncca 120

agagagagct caagttcgnt ctncagtctt tctgggatgg caagagcagc gncngaggat 180

ttgcagaagg tgtcttctga tctcaggnca tccatctgga agcagatggc tgntgntggg 240

atcagtacat cccnagcaac acttctctca ctatgaccag 280

<210> 2787
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2787

gcacncgtac gtaagctcgg aattcggctc gagcttgctc cctcanaagc gaagnagaag 60

ccacananaa ccagtctcct actctctctc acccacaaga naaatggnat ctcacatcgt 120

tggntacccc cgcatgggtt cccaaganag agctcaagtt cgctctcgag tctttctggg 180

ntggcnagag cagcgccgag gatttgcaga aggtggctgc tgatctcagg tcatccaatc 240

tggaancaag attgccngat cggggatcaa gctccatncc cagcaacann tttttgct 298

<210> 2788
<211> 151
<212> nucleic acid
<213> Glycine max

<400> 2788

gtcgcangca ntgtacgtaa gctcggaatt cggctcgaga tctggaagca gatggctgat 60

gctgggatca agtacatccc cagcaacact ttctctcact atgaccaggt tctcgacgcc 120

accgccaccc tcggtgccgt tccaccaagg t 151

<210> 2789
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2789

gcacgcgtac gtaagctcgg aattcggctc gagcttcaac ttgctccctc agaagcgaag 60

aagaagccac agagnactag tctctactct tcacccgcaa naaaaaaatg ggcatctcac 120

attcgttgga tacccccgta tgggtcccaa gagagagctc aagttcgctc tcgagtcttc 180

naggatggca agagcagcgc cgaggatttg cagaaggtgt cttctgatct cagg 234

<210> 2790
<211> 138
<212> nucleic acid
<213> Glycine max

<400> 2790

gnagaagaag ccacagagaa ctagtctcct actctcaccc gcaagaaaaa aatggcatct 60

cacatcnttg gataccccg tatgggtccc aagagagagc tcaagttcgc tctcgagtct 120

ttctgggatg gcaagagt 138

<210> 2791
<211> 152
<212> nucleic acid
<213> Glycine max

<400> 2791

acacgcgtac gtaaagctnc ggaattcngc tcgagctgga agcagatggc tgatgctggg 60

atcaagtaca tccccagcaa cactttctnn tnactatgac caggttctcg acgccacccg 120

ccaccctcgg tgccgttcca cncangnnag gn 152

<210> 2792
<211> 501
<212> nucleic acid
<213> Glycine max

<400> 2792

gtttgatctc cgtggnccta tataaagaga tatgangtcg nntccacgcg tangtaanac 60

tcggaattcg gctcgagcaa cnttccaatc cttccaacca ccactantgg atccttcnct 120

canacngtag aactgaggag ggtacgccgt gagttcaagg ctaacatgat ctccgaggaa 180

gagtatgtta agtcaattaa ggaggaaatt cncaaagttg ttgaacttca anaaagagct 240

gatattgatg ttcttgttca tggagaacca gagagaaatg atatggttga gtacntcggt 300

gagcaattgt caggctttgc cttcactgtt aatgggtggg tgcaatccta tggttcccgt 360

tgtgtgaagc cacnaatcat ctatggtgat gtgagccgcc caaagccaat gactgtcttc 420

tggtcanctc tggctcagan ctttaccaag cgccnaatga agggaatgct taccggtccg 480

gttaccaatc ccaactgggn c 501

<210> 2793
<211> 412
<212> nucleic acid
<213> Glycine max

<400> 2793

gagaagacga cagaaggggg ctaaggcatt gtctggcaac aaggatgtgg ccttcttctc 60

tgctaatgct gcanctcang cttcaaggaa gtcctctcca anagtgacca acnaggctgt 120

tcagaaggct gctgctgcat tgaagggttc agatcatcnc cgtgcaacaa atgtcagtgc 180

cagactggat gctcaacaaa anaagctcaa ccttccaatc cttccaacca ccactattgg 240

atccttccct cagactgtan aactgaggag ggtacgccgt gagttcaagg ctaacaagat 300

ctccgaggaa gagtatgtta agtcaattaa ggaggaaatt cgcaaagttg ttgaacttca 360

agaagagctt gatattgatg ttcttgttca tgganaacca anaganaaat ta 412

<210> 2794
<211> 350
<212> nucleic acid
<213> Glycine max

<400> 2794

cacactgctg ttgatcttgt taacgagacc aagttggatg acgagatcaa gtcatggcta 60

gcatttgctg cacaaaaaat tgttgaagtt aacgcattgg ctaaggcatt gtctggcaac 120

aaggatgtgg ccttcttctc tgctaatgct gcagctcagg cttcaaggaa gtcctctcca 180

agagtgacca acgaggctgt tcagaaggct gctgctgcat tgaagggttc agatcatcgn 240

cgtgcaacaa atgtcagtgc cagactggat gctcaacaaa agaagctcaa ccttccatcc 300

ttccaaccac cactattgga tccttccctc agactgtaga actgaggagg 350

<210> 2795

<211>	454
<212>	nucleic acid
<213>	Glycine max

<400>	2795

ccacgcgtcc ggatcatcgc cgtgcaacaa atgtcagtgc cagactggat gctcaacaaa 60

agaagctcaa ngttccngtc cttccaacca ccactattgg atccttccct cagactgtag 120

aactgangag ggtacgccgt gagttcaagg ctaacaagat ctccgaggaa gagtatgtta 180

agtcaattaa ggaggaaatt cgcaaagttg ttgaacttca anaagagctt gatattgatg 240

ttcttgttca tggagaacca gagagaaatg atntggttga gtacttcggt gagcaattgt 300

caggctttgc cttcactgtt aatgggtggg tgcaatctat gggtcccgtt gtgtgaaagc 360

caccaattca tctatgggtg aatgtgnaaa ncncgtccaa aagccaatga ctgtcttctg 420

gtcatctntg gcttaaangc tttaccaaag cgct 454

<210>	2796
<211>	446
<212>	nucleic acid
<213>	Glycine max

<400>	2796

cgaggctgtt cagaaggctg ctgctgcatt gaagggttcn gatcatcgcc gtgcaacaaa 60

tgtcagtgcc agactggatt ctcaacaaaa gaagctcaac cttccaatcc tgccaaccac 120

cactattgga tccttccctc agactgtaga actgaggagg gtacgccgtg aattcaaggc 180

taacaagatc tccgaggaag agtatgtaaa gtcaattaag gaggaaattc gcaaagttgt 240

tgagcttcaa gaagagcttg atattgatgt tcttggtcat ggagaaccag agagaaatga 300

tatggttgag tactttcggt gaacaattgt caagctttgg cntnaccggt aatgggtngg 360

tgcaatccta tggttcccgt tcgtgaaanc cccgatcatt tatgggaatg ttagccgccc 420

aaagccatga ccgntttttg gtattt 446

<210>	2797
<211>	489
<212>	nucleic acid
<213>	Glycine max

<400>	2797

ttctctgccc gttcngtacn nntctccnaa ttcgcnggcc gacccacgcn tccggcagat 60

ctgagaccac ctaccagatt gctttgtcta tcaaggacga agtggaagac cttgaaaagg 120

ctggcatcac tgttatccaa attgatgaag ctgctttgag agagggtctt ccactgagga 180

aatcagagca agctcactac ttggactggg ctgtccatgc cttcagaatc accaatgttg 240

gtgtccagga taccacccag gtacactctt ttggatcatc gcaaatcact gaattagaaa 300

tttttttgt tcatcctcat tttcacatat gttgtaataa tcaacttttc gtattgacag 360

atccacactc acatgtgcta ctcgaacttc aacgacatca tccactccat catcgacatg 420

gacgccgatg ttatcaccat tgagaaatct cgccccgacg anaancttcc gtcagtcctc 480

cgcgaangg 489

<210> 2798
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 2798

tcgcangcnc gcgtacgtaa gctcggaatt cggctcgagg ntcaagtcat ggctagcttt 60

tgctgcccaa aaaattgttg aagttaacgc attggctaaa gcattgtctg gccacaagga 120

tgangccttc ttctctggta atgctgctgc tctggcttca aggaagtctt ctccaagagt 180

gaccaacgag gctgttcaga aggctgctgc tgcattgaag ggttcagatc atcgccgtgc 240

aanaaatgtc agtgccagac tggattctca acaaaagaag ctcaaccttc caatcctgcc 300

aaccaccact attggatcct tccctcagac tgtagaactg 340

<210> 2799
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2799

gtcgcangcc agcgtacgta agctcggaat tcggctcgag aaatgatatg gttgagtact 60

tcggtgagca attgtcaggc tttgccttca ctgttaatgg gtgggtgcaa tcctatggtt 120

cccgttgtgt gaagccacca atcatctatg gtgatgtgag ccgcccaaag ccaatgactg 180

tcttctggtc atctctggct cagagcttta ccaagcgccc aatgaaggga atgcttaccg 240

gtcctgttac cattctcaac tggtcctttg ttagaaatga ccaacctaga tctgagacca 300

cctaccagat tgctttg 317

<210> 2800
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2800

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgaga cgaagtggag gaccttgaaa 60

aggctggcat cactgttatc caaattgatg aagctgcttt gagagagggt ctgccactga 120

ggaaatcaga acaagctcac tacttggact gggctgtcca tgccttcaga atcaccaatg 180

ttggtgtgca ggataccact cagatccaca cccacatgtg ctactccaac ttcaacgaca 240

tcatccactc catcatcgac atggacgctg atgttatcac cattgagaac tctcgctccg 300

atgagaagct cctgtca 317

<210> 2801
<211> 337
<212> nucleic acid
<213> Glycine max

<400> 2801

cnngtcgcan gcacgcntac gtaagctcgg aattcggctc gaggccacca atcatctatg 60

gtgatgtgag ccgcccaaag ccaatgactg tcttctggtc atctctggct cagagcttta 120

ccaagcnccc aatgaaggga atgcttaccg gtcctgttac cattctcaac tggtcctttg 180

ttagaaatga ccaacctaga tctgagacca cctaccagat tgctttggct atcaaggacg 240

aagtggagga ccttgaaaag gctggcatca ctgttatcca aattgatgaa gctgctttga 300

gagagggtct gccactgagg aaatcagaac aagctcn 337

<210> 2802
<211> 329
<212> nucleic acid
<213> Glycine max

<400> 2802

cangcacgcg tacgtaagct cggaattcgg ctcgagntgc tgcattgaag ggttcagatc 60

atcgccgtgc aacaaatgtc agtgccagac tggatgctca acaaaagaag ctcaaccttc 120

caatccttcc aaccaccact attggatcct tccctcagac tgtagaactg aggagggtac 180

gccgtgagtt caaggctaac aagatctccg aggaagagta tgttaagtca attaaggagg 240

aaattcgcaa agttgttgaa cttcaagaag agcttgatat tgatgttctt gttcatggag 300

aaccagagag aaatgatatg gttgagtac 329

<210> 2803
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2803

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tgaggaaatc agagcaagct 60

cactacttgg actgggctgt ccatgccttc agaatcacca atgttggtgt ccaggatacc 120

acccagatcc acactcacat gtgctactcg aacttcaacg acatcatcca ctccatcatc 180

gacatggacg ccgatgttat caccattgag aactctcgct ccgacgagaa gcttctgtca 240

gtcttccgcg aaggtgtgaa gtatggtgct ggaattggcc ctggtgtcta tgacatccac 300

tccccaagaa tacc 314

<210> 2804
<211> 328
<212> nucleic acid
<213> Glycine max

<400> 2804

ctcangcacg cntacgtaan ctcggaattc ggctcgagng tacgccgtga attcaaggct 60

aacaagatct ccgaggaaga gtatgtaaag tcaattaagg aggaaattcg caaagttgtt 120

gagcttcaag aagagcttga tattgatgtt cttgttcatg gagaaccaga gagaaatgat 180

atggttgagt acttcggtga acaattgtca ggctttgcct tcaccgttaa tgggtgggtg 240

caatcctatg gttcccgttg cgtgaagcca ccgatcatct atggtgatgt gagccgccca 300

aagccaatga ccgtcttctg gtcatctc 328

<210> 2805
<211> 323
<212> nucleic acid

<213> Glycine max

<400> 2805

ngtcgcangc acgcgtacgt aagctcggaa ttcggctcga gggcattgtc tggcaacaag 60

gatgtggcct tcttctctgc taatgctgca gctcaggctt caaggaagtc ctctccaaga 120

gtgaccaacg aggctgttca gaaggctgct gctgcattga agggttcaga tcatcgccgt 180

gcaacaaatg tcagtgccag actggatgct caacaaaaga agctcaacct tccaatcctt 240

ccaaccacca ctattggatc cttccctcag actntagaac tgaggagggt acgccgtgag 300

ttcaaggcta acaagatctc cga 323

<210> 2806
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2806

ngnncgcatg cacgcgtacg tnagctcgga attcggctcg agatatggtt gagtacttcg 60

gtgagcaatt gtnaggcttt gccttcactg ttaatgggtg ggtgcnatcc tatggttccc 120

gttgtgtgaa gccaccaatc atctatggtg atgtgagccg cccaaagcca atgactgtct 180

tctggtcatc tctggctcag agctttacca agcgcccaat gaagggaatg cttaccggtc 240

ctgttaccat tctcaactgg tcctttgtta ganatgacca acctagatct gagaccacct 300

accagattgc tt 312

<210> 2807
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2807

canngacgcg tacgtnagct cggaattcgg ctcgaggaaa tgatatggtt gagtacttcg 60

gtgagcaatt gtcaggcttt gccttcactg ttaatgggtg ggtgcaatcc tatggttccc 120

gttgtgtgaa gccaccaatc atctatggtg atgtgagccg cccaaagcca atgactgtct 180

tctggtcatc tctggctcag agctttacca agcgcccaat gaagggaatg cttaccggtc 240

ctgttaccat tctcaactgg tcctttgtta gaaatgacca acctagatct gagac 295

<210> 2808
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2808

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggactgggct gtccatgcct 60

tcagaatcac caatgttggt gtccaggata ccacccagat ccacactcac atgtgctact 120

cgaacttcaa cgacatcatc cactccatca tcgacatgga cgccgatgtt atcaccattg 180

agaactctcg ctccgacgag aagcttctgt cagtcttccg cgaaggtgtg aagtatggtg 240

ctggaattgg ccctggtgtc tatgacatcc actccccaag aataccacca actgaagaaa 300

ttgctga 307

<210> 2809
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2809

gtcgcatgca cgcgtacgta agctcgggaa ttcggctcga gcgcaaagtt gttgagcttc 60

aagaagagct tgatattgat gttcttgttc atggagaacc agagagaaat gatatggttg 120

agtacttcgg tgaacaattg tcaggctttg ccttcaccgt taatgggtgg gtgcaatcct 180

atggttcccg ttgcgtgaag ccaccgatca tctatggtga tgtgagccgc ccaaagccaa 240

tgaccgtctt ctggtcatct ctggctcaga gctttaccaa gcgcccaatg aagggaatgc 300

ttaccggtcc tgtt 314

<210> 2810
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2810

agncgcangc nagcgtacgt aagctcggga attcggctcg agggagggta cgccgtgagt 60

tcaaggctaa caagatctcc gaggaagagt atgttaagtc aattaaggag gaaattcgca 120

aagttgttga acttcaagaa gagcttgata ttgatgttct tgttcatgga gaaccagaga 180

gaaatgatat ggttgagtac ttcggtgagc aattgtcagg ctttgccttc actgttaatg 240

ggtgggtgca atcctatggt tcccgttgtg tgaagccacc aatcatctat ggtgatgtga 300

gccgcc 306

<210> 2811
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2811

acnacgcang cacgcgtacg taagctcgga attcggctcg agctccatca tcgacatgga 60

cgctgatgtt atcaccattg agaactctcg ctccgatgag aagctcctgt cagtcttccg 120

tgaaggtgtg aagtatggtg ctggaattgg ccctggtgtc tatgacatcc actccccaag 180

aataccacca actgaagaaa tcgctgacag aatcaataag atgcttgcag tgctcgagaa 240

gaacatcttg tgggtcaacc ctgactgtgg tctcaagacc cgcaagtaca ctgaagtgaa 300

gccagccctc 310

<210> 2812
<211> 353
<212> nucleic acid
<213> Glycine max

<400> 2812

nnnnnnaaaa gtcgggaagt cgcangcacg cgtacgtaag ctcggaattc ggctcgnanc 60

tcgagccgaa tcggctcgag ccagattgct ttggctatca aggaagnagt ggaggacctt 120

acnaaggctg gcatcactgt actccaaatt gatgaagctg ctttgagaga gggtctgcca 180

ctgaggaaat cagaacaagc tcactacttg gactgggctg tccatgcctt cagaatcacc 240

aatgttggtg tgcaggatac cactcagatc cacacccaca tgtgctactc caacttcaac 300

gacatcatcc actccatcat cgacatggac gctgatgtta tcaccattga gat 353

<210> 2813
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2813

ctcnncgcgt tacgtaagct cgggaattcg gctcgaggct gctttgagag agggtctgcc 60

actgaggaaa tcagaacaag ctcactactt ggactgggct gtccatgcct tcagaatcac 120

caatgttggt gtgcaggata ccactcagat ccacacccac atgtgctact ccaacttcaa 180

cgacatcatc cactccatca tcgacatgga cgctgatgtt atcaccattg agaactctcg 240

ctccgatgag aagctcctgt cagtcttccg tgaaggtgtg aagtatggtg ctggaat 297

<210> 2814
<211> 551
<212> nucleic acid
<213> Glycine max

<400> 2814

gnnngagagg tttntgntan gggggaaggg ggggnanatn ntagaanngc tatgacgtcg 60

catgcacgcg tacgtaagct cggaattcgg ctcgagtgga cgctgatgtt atcaccattg 120

agaactctcg ctccgatgag aagctcctgg tcagtcttcc gtgaaggtgt gaagtatggt 180

gctggaattg gccctggtgt ctatgacatc cactccccaa gaataccacc aactgaagaa 240

atcgctgaca gaatcaataa gatgcttgca gtgctcgaga agaacatctt gtgggtcaac 300

cctgactgtg gtctcaagac ccgcaagtac actgaagtga agccagccct cacaaacatg 360

gttgccgcag caaaactcat ccgtaacgaa cttgccaagt gaatggtata aagaaagtag 420

aatctacaag ttcattggtt ctgcttttat tataccncca aggaaaaatt ttctatantn 480

gggtggttca aataaccggt gtggaatatt tanaggttta acatgctctg tgagcaattg 540

atctttctca c 551

<210> 2815
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 2815

agtcntcann nntcanacgt cgcatgcacg cgtacgtaag ctcggaattc ggctcgagga 60

tcatcgccgt gcaacaaatg tcagtgccag actggattct caacaaaaga agctcaacct 120

tccaatcctg ccaaccacca ctattggatc cttccctcag actgtagaac tgaggagggt 180

acgccgtgaa ttcaaggcta acaagatctc cgaggaagag tatgtaaagt caattaagga 240

ggaaattcgc aaagttgttg agcttcaaga agagcttgat attgatgttc ttgttcatgg 300

agaaccagag agaaatgata tggttgagta cttcgg 336

<210> 2816
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2816

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gactcgaact tcaacgacat 60

catccactcc atcatcgaca tggacgccga tgttatcacc attgagaact ctcgctccga 120

cgagaagctt ctgtcagtct tccgcgaagg tgtgaagtat ggtgctggaa ttggccctgg 180

tgtctatgac atccactccc caagaatacc accaactgaa gaaattgctg acagaatcaa 240

caagatgctg gcagtgctcg agangaacat cttgtgggnt gaacctgact gtgggctcaa 300

gacccgtaaa gtn 313

<210> 2817
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2817

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ngctgctttg agagagggtc 60

ttccactgag gaaatcagag caagctcact acttggactg ggctgtccat gccttcagaa 120

tcaccaatgt tggtgtccag gataccaccc agatccacac tcacatgtgc tactcgaact 180

tcaacgacat catccactcc atcatcgaca tggacgccga tgttatcacc attgagaact 240

ctcgctccga cgagaagctt ctgtcagtct tccgcgaagg tgtgaagtat ggtgctggaa 300

ttgg 304

<210> 2818
<211> 438
<212> nucleic acid
<213> Glycine max

<400> 2818

ccacgcgtcc gaagagagaa atgatatggn tgngtttttn ngagaacaat ngnnangctt 60

tgcctggnac cgntaatgnn tggntgcaga tcctatggtt nccgntgcgt gaagccaccg 120

atcatctatg gtgatgtgag ccgnccaaag ccaatgaccg tcttctggtc atctctggct 180

cagagcttta ccaagcgccc aatgaaggga atgcttaccg gtcctgttac cattctcaac 240

tggtcctttg ttagaaatga ccaacctaga tctgagacca cctaccagat tgctttgtct 300

atcaaggacn aantggaaga ccttgaaaag ggctggcatc actgntatcc aaattgatga 360

aactgctttg agagaagggt ctttcnactt gaggaaatca anaancaagc tcactacttt 420

gnacctgggn ttgtccat 438

<210> 2819
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2819

nattacancn tnagtcgcat gcacgcgtac gtaagctcgg aattcggctc gaggcaaaga 60

taagcttgtt gtgtccacct cctcctccct tcttcacact gctgttgatc tagttaacga 120

gaccaagttg gatgatgaga tcaagtcatg gctagctttt gctgcccaaa aaattgttga 180

agttaacgca ttggctaaag cattgtctgg ccacaaggat gaggccttct tctctggtaa 240

tgctgctgct ctggcttcaa ggaagtcttc tccaagagtg accaacgagg ctgttcagaa 300

ggctgctgct gcattgaagg g 321

<210> 2820
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2820

nacgtcgcan gcacgcgtac gtaagctcgg aattcggctc gagccaatgt tggtgtccag 60

gataccaccc agatccacac tcacatgtgc tactcgaact tcaacgacat catccactcc 120

atcatcgaca tggacgccga tgttatcacc attgagaact ctcgctccga cgagaagctt 180

ctgtcagtct tccgcgaagg tgtgaagtat ggtgctggaa ttggccctgg tgtctatgac 240

atccactccc caagaatacc accaactgaa gaaattgctg acagaatcaa caagatgctg 300

gcagtg 306

<210> 2821
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2821

tcncatgcac gcgtacgtaa gctcggaatt cggctcgagc tagcttttgc tgcccaaaaa 60

attgttgaag ttaacgcatt ganctaaagc attgtctggc cacaaggatg aggccttctt 120

ctctggtaat gctgctgctc tggcttcaag gaagtcttct ccaagagtga ccaacgaggc 180

tgttcagaag gctgctgctg cattgaaggg ttcagatcat cgccgtgcaa caaatgtcag 240

tgccagactg gattctcaac aaaagaagct caaccttcca atcctgccaa ccaccactat 300

tggatccttc cctcagactg tag 323

<210> 2822
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2822

acgtnagctc ggaattcggc tcgagcttgg actgggctgt ccatgccttc agaatcacca 60

atgttggtgn gcaggatacc actcagatcc acacccacat gtgctactcc aacttcaacg 120

acatcatcca ctccatcatc gacatggacg ctgatgttat caccattgag aactctcgct 180

ccgatgagaa gctcctgtca gtcttccgtg aaggtgtgaa gtatggtgct ggaattggcc 240

ctggtgtcta gacatccact ccccaagaat accaccaact gaagaaatcg 290

<210> 2823
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2823

ctgctgttga tcttgttaac gagaccaagt tggatgacga gatcaagtca tggctagcat 60

ttgctgcaca aaaaattgtt gaagttaacg cattggctaa ggcattgtct ggcaacaagg 120

atgtggcctt cttctctgct aatgctgcag ctcaggcttc aaggaagtcc tctccaagag 180

tgaccaacga ggctgttcag aaggctgctg ctgcattgaa gggttcagat catcgccgtg 240

caacaaatgt cagtgccaga ctgga 265

<210> 2824
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2824

cgtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcaaagttgt tgaacttcaa 60

gaagagcttg atattgatgt tcttgttcat ggagaaccag agagaaatga tatggttgag 120

tacttcggtg agcaattgtc aggctttgcc ttcactgtta atgggtgggt gcaatcctat 180

ggttcccgtt gtgtgaagcc accaatcatc tatggtgatg tgagccgccc aaagccaatg 240

actgtcttct ggtcatctct ggctcagagc tttaccaagc gcccaatgn 289

<210> 2825
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2825

gttaacgcat tggctaaggc attgtctggc aacaaggatg tggccttctt ctctgctaat 60

gctgcagctc aggcttcaag gaagtcctct ccaagagtga ccaacgaggc tgttcagaag 120

gctgctgctg cattgaaggg ttcagatcat cgccgtgcaa caaatgtcag tgccagactg 180

gatgctcaac aaaagaagct caaccttcca atccttccaa ccaccactat tggntccttc 240

cctcagactg tagaactgag gaggg 265

<210> 2826
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2826

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gcttcacact gctgttgatc 60

nagttaacga gaccaagttg gatgatgaga tcaagtcatg gctagctttt gctgcccaaa 120

aaattgttga agttaacgca ttggctaaag cattgtctgg ccacaaggat gaggccttct 180

tctctggtaa tgctgctgct ctggcttcaa ggaagtcttc tccaagagtg accaacgagg 240

ctgttcagaa ggctgctgct gcattgaagg gttcagatca tcgccgtgca acaaatgtca 300

gtgc 304

<210> 2827
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2827

ctggtttgan tgttcttgtt gagacctact ttgctgacat ccctgctgag gcatacaaga 60

ccctcacatc tctgaatggc gtcactgcat atggatttga tttggtccgt ggaaccaaca 120

ctcttgattt gatcaagggt ggatttccca gcggaaaata cctctttgct ggagtggttg 180

atggaaggna catctgggcc aatgaccttg ctgcttctct cactaccttg cagggtcttg 240

agggcattgt gggcaaagat aagcttgtt 269

<210> 2828
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2828

tcncatnnag cgnaggtann tacgtaagct cggaattcgg ctcgagtacg gctgcgagaa 60

gacgacagaa gggcatggag aaccagagag caatgatatg gttgagtact tcggtgagca 120

attgtcaggc tttgccttca ctgttaatgg gtgggtgcaa tcctatggtt cccgttgtgt 180

gaagccacca atcatctatg gtgatgtgag ccgcccaaag ccaatgactg tcttctggtc 240

atctctggct cagagcttta ccaagcgccc aatgaaggga atgcttaccg gtcctgttac 300

cattctcaac tggtc 315

<210> 2829
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2829

gtcgcangca cgcgtacgtn agctcggnat tcggctcgag caagcgccca atgaagggaa 60

tgcttaccgg tcctgttacc attctcaact ggtcctttgt tagaaatgac caacctagat 120

ctgagaccac ctaccagatt gctttgtcta tcaaggacga ngtggaagac cttgaaaagg 180

cggcatcact gttatccaaa ttgatgaagc tgctttgaga gagggtcttc cactgaggaa 240

atcagagcaa gctcactact tggactgggc tgtccatgcc ttcagaatca ccaatgttgg 300

tgtccaggat accacccaga 320

<210> 2830
<211> 512
<212> nucleic acid
<213> Glycine max

<400> 2830

gnngnnggnt ntganagggg naagggggga antttagaac agctatgacg tcgcatgcac 60

gcgtacgtaa gctcggaatt cggctcgagc aaggttcttg ctgtctacaa ggaagttatt 120

gctgacctta aggcagctgg tgcttcatgg attcagtttg atgagcctac ccttgtcttg 180

gaccttgagt ctcacaagtt gcaagcattc actgacgcat atgcagaact tgcgcctgct 240

ttgtctggtt tgaatgttct tgttgagacc tactttgctg acatccctgc tgaggcatac 300

aagaaccctt acatnttctt gaatggcgtc actgcatatg gatttgattt ggtccgtgga 360

accaacactc ttgatttgat caagggtgga tttccagcgg aaaatacctc tttcttggaa 420

tgggttgatg gaaggacatt tgggccaatg accttgctgg ttttttttaat acctgcaggg 480

cttgaagggc atttgggcca aaataacctg tt 512

<210> 2831
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2831

nnngtcgcan gcacgcgtac gtaagctcgg aattcggctc gaggttgagt acttcggtga 60

acaattgtca ggctttgcct tcaccgttaa tgggtgggtg caatcctatg gttcccgttg 120

cgtgaagcca ccgatcatct atggtgatgt gagccgccca aagccaatga ccgtcttctg 180

gtcatctctg gctcagagct ttaccaagcg cccaatgaag ggaatgctta ccggtcctgt 240

taccattctc aactggtcct ttgttagaaa tgaccaacct agatngagac cactaccaga 300

ttgctttgtc tatcaaggac gaagg 325

<210> 2832
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2832

nnnaagcntc angnacgcgt acgtnagctc ggaattcggc tcgagggctt caaggaagtc 60

ctctccaaga gtgaccaacg aggctgttca gaaggctgct gctgcattga agggttcaga 120

tcntcgccgt gcaacaaatg tcagtgccag actggatgct caacaaaaga agctcaacct 180

tccaatcctt ccaaccacca ctattggntc cttccctcag actgtagaac tgaggaggga 240

ccgccgtgag ttcaaggcta acaagatctc cgaggaagag tatgttaagt caattaagga 300

ggaaattcgc aaagttgttg aan 323

<210> 2833
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2833

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag agtcaattaa ggaggaaatt 60

cgcaaagttg ttgaacttca agaagagctt gatattgatg ttcttgttca tggagaacca 120

gagagaaatg atatggttga gtacttcggt gagcaattgt caggctttgc cttcactgtt 180

aatgggtggg tgcaatccta tggttcccgt tgtgtgaagc caccaatcat ctatggtgat 240

gtgagccgcc caaagccaat gactgtcttc tggtcatctc tggctcagag ctttac 296

<210> 2834
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2834

cgcccaatga agggaatgct taccggtcct gttaccattc tcaactggtc ctttgttaga 60

aatgaccaac ctagatctga gaccacctac cagattgctt tgtctatcaa ggacgaagtg 120

gaagaccttg aaaaggctgg catcactgtt atccaaattg atgaagctgc tttgagagag 180

ggtcttccac tgaggaaatc agagcaagct cactacttgg actgggctgt ccatgccttc 240

agaatcacca atgttggtgt ccagg 265

<210> 2835
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2835

wgtngcnngc acgcgtacgt aagctcggaa ttcggctcga gttcccagtg gaaaatacct 60

ctttgctgga gtggttgatg gaaggaacat ctgggccaat gaccttgctg cttctctcac 120

tacattgcag ggtcttgagg gcattgtggg caaagataag cttgttgtgt ccacctcctc 180

ctcccttctt cacactgctg ttgatcttgt taacgagacc aagttggatg acgagatcaa 240

gtcatggcta gcatttgctg cacaaaaaat tgttgaagtt aacgcattgg ctaaggcatt 300

gtctggcaac aaggagtggc cttct 325

<210> 2836
<211> 346
<212> nucleic acid
<213> Glycine max

<400> 2836

gttaacgcat tggctaaggc attgtctggc aacaaggatg tggccttctt ctctgctaat 60

gctgcagctc aggcttcaag naagtcctct ccnagagtga ccaacgaggc tgttcagaag 120

gctgctgctg cattgaaggg ttcanatcat cgccgtgcaa caaatgtcag tgccagactg 180

gatgctcaac aaaagaagct caaccttcca atccttccaa ccaccactnt tgnntccttc 240

cctcagactg tagaactgag gagggtacgc gtgagttcaa ggtaacaaga ntccgaggaa 300

gagtatgtta agnccattaa ggaganatnt caagtgtgaa ctnaag 346

<210> 2837
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2837

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg accttgctgc ttctctcact 60

acattgcagg gtcttgaggg cattgtgggc aaagataagc ttgttgtgtc cacctcctcc 120

tcccttcttc acactgctgt tgatcttgtt aacgagacca agttggatga cgagatcaag 180

tcatggctag catttgctgc acaaaaaatt gttgaagtta acgcattggc taaggcattg 240

tctggcaaca aggatgtggc cttcttctct gctaatgctg cagctcaggc ttcaaggaag 300

tcctctccaa ga 312

<210> 2838
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 2838

ntatccntnn acgtcgcang cacgcgtacg taagctcgga attcggctcg agngagggta 60

cgccgtgagt tcaaggctaa caagatctcc gaggaagagt atgttaagtc aattaaggag 120

gaaattcgca aagttgttga acttcaagaa gagcttgata ttgatgttct tgttcatgga 180

gaaccagaga gaaatgatat ggttgagtac ttcggtgagc aattgtcagg ctttgccttc 240

actgttaatg ggtgggtgca atcctatggt tcccgttgtg tgaagccacc aatcatctat 300

ggtgatg 307

<210> 2839
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2839

cttnnagtcn catncacnag tacgnaantc ngcnnnncng ttcttgttga gacctacttt 60

gctgacatcc ctgctgaggc atacaagacc ctcacatctc tgaatggcgt cactgcatat 120

ggatttgatt tggtccgtgg aaccaacact cttgatttga tcaagggtgg atttcccagc 180

ggaaaatacc tctttgctgg agtggttgat ggaaggaaca tctgggccaa tgaccttgct 240

gcttctctca ctaccttgca gggtcttgag ggcattgtgg gcaaagataa gcttgttgtg 300

tccacctcct 310

<210> 2840
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2840

nttcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcacctacca gattgctttg 60

tctatcaagg acgangtgga agaccttgaa aaggctggca tcactgttat ccaaattgat 120

gaagctgctt tgagagaggg tcttccactg aggaaatcag agcaagctca ctacttggac 180

tgggctgtcc atgccttcag aatcaccaat gttggtgtcc aggataccac ccagatccac 240

actcacatgt gctactcgaa cttcaacgac atcatccact ccatcatcga catggac 297

<210> 2841
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2841

gtcgcttnat gcacgcgtac gtaagctcgg aattcggctc gagaaaaatt gttgaagtta 60

acgcattggc taaggcattg tctggcaaca aggatgtggc cttcttctct gctaatgctg 120

cagctcaggc ttcaaggaag tcctctccaa gagtgaccaa cgaggctgtt cagaaggctg 180

ctgctgcatt gaagggttca gatcatcgcc gtgcaacaaa tgtcagtgcc agactggatg 240

ctcaacaaaa gaagctcaac cttccaatcc ttccaaccac cactattgga tccttccctc 300

aga 303

<210> 2842
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2842

gttcttgttc atggagaacc agagagaaat gatatggttg agtacttcgg tgaacaattg 60

tcaggctttg ccttcaccgt taatgggtgg gtgcaatcct atggttcccg ttgcgtgaag 120

ccaccgatca tctatggtga tgtgagccgc ccaaagccaa tgaccgtctt ctggtcatct 180

ctggctcaga gctttaccaa gcgcccaatg aagggaatgc ttaccggtcc tgttaccatt 240

c 241

<210> 2843
<211> 296
<212> nucleic acid

<213> Glycine max

<400> 2843

ntgcngcgta ngtaagctcg gaattcggct cgagtcaggc cttcttctct gctaatgctg 60

cagctcaggc ttcaaggaag tcctctccaa gagtgaccaa cgaggctgtt cagaaggctg 120

ctgctgcatt gaagggttca gatcatcgcc gtgcaacaaa tgtcagtgcc agactggatg 180

ctcaacaaaa gaagctcaac cttccaatcc ttccaaccac cactattggn tccttccctc 240

agactgtaga actgaggagg gtacgccgtg agttcaaggc tancaagatc tccgag 296

<210> 2844
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2844

cgcccaatga agggaatgct taccggtcct gttaccattc tcaactggtc ctttgttaga 60

aatgaccaac ctagatctga gaccacctac cagattgntt tgtctatcaa ggacgaagtg 120

gaagaccttg aaaaggctgg catcactgtt atccaaattg atgaagctgc tttgagagag 180

ggtcttccac tgaggaaatc agagcaagct cactacttgg actgggctgt ccatgccttc 240

agaatcacca angttggtgt ccagg 265

<210> 2845
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2845

atntgtcgca tgcncgcgta cgtaagctcg gnattcggct cgagngacat catccactcc 60

atcatcgaca ggncgccgat gttatcacca ttgagaantc tcgctccgac gagangcttc 120

tgtcagtctt ccgcgaaggt gtgangtatg gtgctggaat tggccctggt gtctatgaca 180

tccactcccc aagaatacca ccaactgaag anattgctga cagaatcaac aagatgctgg 240

cagtgctcga gaagnacatc ttgtgggtga nccctgactg tgggctcaag acccgtaagt 300

acactgaggt gaagc 315

<210> 2846

<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2846

ngncatgcac gcgtacgtaa gctcggaatt nggctcgagt cagatcatcg ccgtgcaaca 60

aatgtcagtg ccagactgga ttctcaacaa aagaagctca accttccaat cctgccaacc 120

accactattg gatccttccc tcagactgta gaactgagga gggtacgccg tgaattcaag 180

gctaacaaga tctccgagga agagtatgta aagtcaatta angaggaant tcgcaaagtt 240

gttgagcttc aagaagagct tgatatngat gttcttgttc atggagaacc agagagaaat 300

gatatggttg n 311

<210> 2847
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2847

gaagccaccg atcatctatg gtgatgtgag ccgcccaaag ccaatgaccg tcttctggtc 60

atctctggct cagagcttta ccaagcgccc aatgaaggga atgcttaccg gtcctgttac 120

cattctcaac tggtcctttg ttagaaatga ccaacctaga tctgagacca cctaccagat 180

tgctttgtct atcaaggacg aagtggaaga ccttgaaaag gctggcatca ctgttatcca 240

aattgatgaa gctgct 256

<210> 2848
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2848

gtcgcatgca cgcgtacgta agctcggaat tcgggctcga ggatttgatc aagggtggat 60

ttcccagcgg aaaatacctc tttgctggag tggttgatgg aaggaacatc tgggccaatg 120

accttgctgc ttctctcact accttgcagg gtcttgaggg cattgtgggc aaagataagc 180

ttgttgtgtc cacctcctcc tcccttcttc acactgctgt tgatctagtt aacgagacca 240

agttggatga tgagatcaag tcatggctag cttttgctgc ccaaaaaatt gttgaagtta 300

acgcatgg 308

<210> 2849
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2849

acaagnanna ngtacgtaag ctcgggaatt cggctcgagc cttcttctct gctaatgctg 60

cagctcaggc ttcaaggaag tcctctccaa gagtgaccaa cgaggctgtt cagaaggctg 120

ctgctgcatt gaagggttca gatcatcgcc gtgcaacaaa tgtcagtgcc agactggatg 180

ctcaacaaaa gaagctcaac cttccaatcc ttccaaccac cactattgga tccttccctc 240

agactgtaga actgaggagg gtacgccgtg agttcaaggc taacaagatc tc 292

<210> 2850
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2850

cgcangcacn cgtacgtaag ctcggaattc ggctcgagcc actgaggaaa tcgaacaagc 60

tcactacttg gactgggctg tccatgcctt cagaatcacc aatgttggtg tgcaggatac 120

cactcagatc cacacccaca tgtgctactc caacttcaac gacatcatcc actccatcat 180

cgacatggac gctgatgtta tcaccattga gaactctcgc tccgatgaga agctcctgtc 240

agtcttccgt gaaggtgtga agtatggtgc tggaattggc cctggtgtct at 292

<210> 2851
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2851

gtcncangca cgcntacgta anctcggaat tcggctcgag aaatgatatg gttgagtact 60

tcggtgaaca attgtcaggc tttgccttca ccgttaatgg gtgggtgcaa tcctatggtt 120

cccgttgcgt gaagccaccg atcatctatg gtgatgtgag ccgcccaaag ccaatnaccg 180

tcttctggtc atctctggct cagagcttta ccaagcgccc aatgaaggga atgcttaccg 240

gtcctgttac cattctcaac tggtcctttg ttagaaatga ccaacctang tataaactcc 300

acaccgaaaa atgaacatca aggaggg 327

<210> 2852
<211> 345
<212> nucleic acid
<213> Glycine max

<400> 2852

gtcgcangcn cgcgtacgtn agctcngaat tcggctcgag cnnagaccct cacatctctg 60

aatnggcgtc actgcatatg ggtttgattt ggtccgtgga acccatactc ttgatttgat 120

caagggtgga tttcccagtg gaaaatacct ctttgctgga gtggttgatg gaaggnacat 180

ctgggccaat gaccttgctg cttctctcac tacattgcag ggtcttgagg gcattgtggg 240

caaagataag cttgttgtgt ccacctcctc ctcccttctt cacactgctg ttgatcttgt 300

taacgagacc aagttggatg acgagatcaa gtcatggcta gcatt 345

<210> 2853
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2853

gtcgcnngca cgcgtacgta agctcggaat tcggctcgag gctgttcaga aggctgctgc 60

tgcattgaag ggttcagatc atcgccgtgc aacaaatgtc agtgccagac tggatgctca 120

acaaaagaag ctcaaccttc caatccttcc aaccaccact attggatcct tccctcagac 180

tgtagaactg aggagggtac gccgtgagtt caaggctaac aagatctccg aggaagagta 240

tgttaagtca attaaggagg aaattcgcaa agttgttgaa cttcaagaag agcttgatat 300

tgatgttcct 309

<210> 2854
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2854

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gtgaagccac caatcatcta 60

tggtgatgtg agccgcccaa agccaatgac tgtcttctgg ttcatctctg gctcagagct 120

ttaccaagcg cccaatgaag ggaatgctta ccggtcctgt taccattctc aactggtcct 180

ttgttagaaa tgaccaacct agatctgaga ccacctacca gattgctttg gctatcaagg 240

acgaatggag gaccttgaaa aggctggcat cactgttatc caaattgatg aagctgcttt 300

gagagagggt c 311

<210> 2855
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2855

gtcgcngcac gcgtacgtaa gctcggaatt cggctcgagc cactccatca tcgacatgga 60

cgctgatgtt atcaccattg agaactctcg ctccgatgag aagctcctgt ncagtcttcc 120

gtgaaggtgt gaagtatggt gctggaattg gccctggtgt ctatgacatc cactccccaa 180

gaataccacc aactgaagaa atcgctgaca gaatcaataa gatgcttgca gtgctcgaga 240

agaacatctt gtgggtcaac cctgactgtg gttcaagacc cgcaagtaca ctgaagtgaa 300

gccagcccct nacaaacatg gttg 324

<210> 2856
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2856

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc cttgaaaagg ctgggcatca 60

ctgttatcca aattgatgaa gctgctttga gaganggtct tccactgagg aaatcagagc 120

aagctcacta cttggactgg gctgtccatg ccttcagaat caccaatgtt ggtgtccagg 180

ataccaccca gatccacact cacatgtgct actcgaactt caacgacatc atccactcca 240

tcatcgacat ggacgccgat gtttcaccat tgagaactct cgctccgacg agaagcttct 300

gtcagtcttc c 311

<210> 2857
<211> 258
<212> nucleic acid

<213> Glycine max

<400> 2857

ccgatgttat caccattgag aactctcgct ccgacgagaa gcttctgtca gtcttccgcg 60

aaggtgtgaa gtatggtgct ggaattggcc ctggtgtcta tgacatccac tccccaagaa 120

taccaccaac tgaagaaatt gctgacagaa tcaacaagat gctggcagtg ctcgagaaga 180

acatcttgtg ggtgaaccct gactgtgggc tcaagacccg taagtacact gaggtgaagc 240

cagccctana aananggt 258

<210> 2858
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2858

acgtcgcang cacgcgtacg taagctcgga attcggctcg aggagaaatg atatggttga 60

gtacttcggt gaacaattgt caggctttgc cttcaccgtt aatgggtggg tgcaatccta 120

tggttcccgt tgcgtgaagc caccgatcat ctatggtgat gtgagccgcc caaagccaat 180

gaccgtcttc tggtcatctc tggctcagag ctttaccaag cgcccaatga agggaatgct 240

taccggtcct gttaccattc tcaactggtc ctttgttaga aa 282

<210> 2859
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2859

gcacgcgtac gtnagctcgg aattcggctc gaggcttctc tcactacatt gcagggtctt 60

gagggcattg tgggcaaaga taagcttgtt gtgtccacct cctcctccct tcttcacact 120

gctgttgatc ttgttaacga gaccaagttg gatgacgaga tcaagtcatg gctagcattt 180

gctgcacaaa aaattgttga agttaacgca ttggctaagg cattgtctgg caacaaggat 240

gtggccttct tctctgctaa tgctgcagct caggcttcaa ggaagtcctc tccaaga 297

<210> 2860
<211> 286
<212> nucleic acid

<213> Glycine max

<400> 2860

cacgcgtacg taagctcgga attcggctcg aggcgcccaa tgaagggaat gcttaccggt 60

cctgttacca ttctcaactg gtcctttgtt agaaatgacc aacctagatc tgagaccacc 120

taccagattg ctttgtctat caaggacgaa gtggaagacc ttgaaaaggc tggcatcact 180

gttatccaaa ttgatgaagc tgctttgaga gagggtcttc cactgaggaa atcagagcaa 240

gctcactact tggactgggc tgtccatgcc ttcagaatca ccaatg 286

<210> 2861
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2861

cgcatgcncg cgtacgtaag ctcggaattc ggctcgagaa gcattgtctg gncacaagga 60

tgaggccttc ttctctggta atgctgctgc tctggcttca aggaagtctt ctccaagagt 120

gaccaacgag gctgtncaga aggctgctgc tgcattgagg gttcagatca tcgccgtgca 180

acaaatgtca gtgccagact ggattctcaa caaaagaagc tcaaccttcc aatcctgcca 240

accaccacta ttggatcctt ccctcagact gtagaactga ggagggtacg ccgtgaattc 300

aag 303

<210> 2862
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2862

gtcgcangca cgcgtacgta agctcggaat tcgngctcga gtcaccattg agaactctcg 60

ctccgatgag aagctcctgt cagtcttccg tgaaggtgtg aagtatggtg ctggaattgg 120

ccctggtgtc tatgacatcc actccccaag aataccacca actgaagaaa tcgctgacag 180

aatcaataag atgcnngcag tgctcgagaa gaacatcttg tgggtcaacc ctgactgtgg 240

tctccaagac ccgcaagtac actgaagtga agccagccct cacaaacatg gttgccgcag 300

caaaactcat c 311

<210> 2863
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2863

gtngcatgca nncttcggct cgaggacgag aagcttctgt cagtcttccg cgaaggtgtg 60

aagtatggtg ctggaattgg ccctggtgtc tatgacatcc actccccaag aataccacca 120

actgaagaaa ttgctgacag aatcaacaag atgctggcag tgctcgagaa gaacatcttg 180

tgggtgaacc ctgactgtgg gctcaagacc cgtaagtaca ctgaggtgaa gccagccctc 240

acaaacatgg ttnncgcagc aaaactcatc cgcaacgaac ttgccaagtg anggta 296

<210> 2864
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2864

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagn cgacacctac ttctccatgg 60

ccagaggtaa tgctaccgtg cctgctatgg agatgancaa ntggttcgac accaactacc 120

actntattgt ccctgaattg ggccctgatg tgaacttcac ctatgcttct cacaaggctg 180

ttgatgaata caaggaggcc aaggcgcttg gagtggatac cattcccgta ctcgttggcc 240

ctgttacata cttgttgctc tccaagcctg ccaagggagt cgagaaatcc ttttctctcc 300

tctct 305

<210> 2865
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2865

tcgcangcac gcgtacgtaa gctcgggaat tcggctcgag caacttcaac gacatcatcc 60

actccatcat cgacatggac gctgatgtta tcaccattga gaactctcgc tccgatgaga 120

agctcctgtc agtcttccgt gaaggtgtga agtatggtgc tggaattggc cctggtgtct 180

atgacatcca ctccccaaga ataccaccaa ctgaagaaat cgctgacaga atcaataaga 240

tgcttgcagt gctcgagaag aacatcttgt gggtcaaccc 280

<210> 2866
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2866

gannctcgcg tacgtnagct cggaattcgg ctcgaggcca caaggatgag gccttcttct 60

ctggtaatgc tgctgctctg gcttcaagga agtcttctcc aagagtgacc aacgaggctg 120

ttcagaaggc tgctgctgca ttgaagggtt cagatcatcg ccgtgcaaca aatgtcagtg 180

ccagactgga ttctcaacaa aagaagctca accttccaat cctgccaacc accactattg 240

gatccttccc tcagactgta gaactgagga gggtacgccg tgaattc 287

<210> 2867
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 2867

ncntgcgtac gtaagctcgg nntncggnng ctcgngaatt cggctcgagc aagaagagct 60

tgatattgat gttcttgttc atggagaacc agagagaaat gatatggttg agtacttcgg 120

tgaacaattg tncaggcttt gccttcaccg ttaatgggtg ggtgcaatcc tatggttccc 180

gttgcgtgaa gccacgatca tctatggtga tgtgagccgc ccaaagccaa tgaccgtctt 240

ctggtcatct ctggctcaga gctttaccaa gcgcccaatg aagggaatgc ttaccggtcc 300

tgttaccatt ctcaactggt cctt 324

<210> 2868
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2868

gtcnnatgca cgcgtncgta agctcggaat tcngctcgag tggagaacca gagagaaatg 60

atatggttga gtacttcggt gagcaattgt caggctttgc cttcactgtt aatgggtggg 120

tgcaatccta tggttcccgt tgtgtgaagc caccaatcat ctatggtgat gtagccgccc 180

aaagccaatg actgtcttct ggtcatctct ggctcagagc tttaccaagc gcccaatgaa 240

gggaatgctt accggtcctg ttaccattct caa 273

<210> 2869
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 2869

tcgcatgcac gcgtacgtna gctcggaatt cggctcgagc agaaggctgc tgctgcattg 60

aagggttcag atcatcgccg tgcaacaaat gtcagtgcca gactggatgc tcaacaaaag 120

aagctcaacc ttccaatcct tccaaccacc actattggat ccttccctca gactgtagaa 180

ctgaggaggg tacgccgtga gttcaaggct aacaagatct ccgaggaaga gtatgttaag 240

tcaattaagg aggaaattcg caaagttgtt gaacttcaag aagagcttga tattga 296

<210> 2870
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2870

gtcgcangca cgcgtacgta agctcggaat tcggctcgag tgctgctctg gcttcaagga 60

agtcttctcc aagagtgacc aacgaggctg ttcagaaggc tgctgctgca ttgaagggtt 120

cagatcatcg ccgtgcaaca aatgtcagtg ccagactgga ttctcaacaa aagaagctca 180

accttccaat cctgccaacc accactattg gatccttccc tcagactgta gaactgagga 240

gggtacgccg tgaattcaag gctaacaaga tctccgagga agagtatgta aagtcaatta 300

a 301

<210> 2871
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2871

cgtcgcangc acgcgtacgt nagctcggaa ttcggctcga ngcagaactt gcgcctgctt 60

tgtctggttt gaatgttctt gttgagacct actttgctga catccctgct gaggcataca 120

agaccctcac atctctgaat ggcgtcactg catatggatt tnatttggtc cgtggaacca 180

acactcttga tttgatcaag ggtggatttc ccagcggaaa atacctcttt gctggagtgg 240

ttgatggaag gaacatctgg gccaatgacc ttgctgcttc tctcactacc ttgcagggtc 300

<210> 2872
<211> 558
<212> nucleic acid
<213> Glycine max

<400> 2872

gagangcgct gtcttnancn gntgctgttc ngcntccctc cggaattccc gggtcgaccc 60

angcgtacgc ncacgcntcc agagtgacca acgangctgt tcataaagct gctgctgcat 120

tgaangactg ggatggnctc cgtgcaacaa atgtcagtgc cagactggat tctcaacana 180

agaagctcaa ccttccaatc ctgccaacca ccactattgg atccttncct cagactgtat 240

aactgaggag ggtacnccnt gaattnaagg ctaacangat ctccnaggaa nagtatgtaa 300

agtcaattaa ngaggaaatt cgcaaanntt gtttnaactn naanaagagc ttgatattga 360

tgttcttgtt catggatanc canagagaaa tgatatggtt gagtnctttn ggtgaacaaa 420

ttttnaangc ttttnccctt tacccgntaa tnggttgggt gcaatnctat nggtttcccn 480

ttgnngttaa agcctcctat cattttattg gngnttttta gcccntccaa angccaattg 540

acccntcttt ttnttatt 558

<210> 2873
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2873

cgtnagctcg gaattcggct cgagggagaa ccagagagaa atgatatggt tgagtacttc 60

ggtgagcaat tgtccaggct ttgccttcac tgttaatggg tgggtgcaat cctatggttc 120

ccgttgtgtg aagccaccaa tcatctatgg tgatgtgagc cgcccaaagc caatgactgt 180

cttctggtca tctctggctc agagctttac caagcgccca atgaagggaa tgcttaccgg 240

tcctgttacc attctcaatg gtcctttgtt agaaatgac 279

<210> 2874

<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2874

acgcgnacgt aagctcggga attcggctcg agcctagatc tgagaccacc taccagattg 60

ctttgtctat caaggacgaa gtggaagacc ttgaaaaggc tggcatcact gttatccaaa 120

ttgatgaagc tgctttgaga gagggtcttc cactgaggan atcagancaa gctcactact 180

tggactgggc tgtccatgcc ttcagaatca ccaatgttgg tgtccaggat accacccaga 240

tccacactca catgtgctac tcgaattcaa cgacatcatc cactccatca tcgag 295

<210> 2875
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 2875

nttngcacgc gtacgtaagc tcggaattcg gctcgagctt gctgtctaca aggaagttat 60

tgctgacctt aaggcagctg gtgcttcatg gattcagttt gatgagccta cccttgtctt 120

ggaccttgag tctcacaagt tgcaagcatt cactgacgca tatgcagaac ttgcgcctgc 180

tttgtctggt ttgaatgttc ttgttgagac ctactttgct gacatccctg ctgaggcata 240

caagaccctc acatctctga atggcgtcac tgcatatgga tttgatttgg tccgtggaac 300

caa 303

<210> 2876
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2876

anngnganac gtcgcangca cgcgtacgta agctcggaat tcggctcgag ncactcacat 60

gtgctactcg aacttcaacg acatcatcca ctccatcatc gacatggacg ccgatgttat 120

caccattgag aactctcgct ccgacgagaa gctnctgtca gtcttccgcg aaggtgtgaa 180

gtatggtgct ggaattggcc ctggtgtcta tgacatccan tccccaagaa taccaccaac 240

tgangaaatt gctgacagaa tcaacaagat gctggcantg ctcgagaaga aca 293

<210> 2877
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2877

gncgtcgcan gcacgcgtac gtaagctcgg aattcggctc gaggttagaa atgaccaacc 60

tagatctgag accacctacc agattgcttt ggctatcaag gacgaagtgg aggaccttga 120

aaaggctggc atcactgtta tccaaattga tgaagctgct ttgagagagg gtctgccact 180

gaggaaatca gaacaagctc actacttgga ctgggctgtc catgccttca gaatcaccaa 240

tgttggtgtg caggatacca ctcagatcca cacccacatg tgctactcca a 291

<210> 2878
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2878

ctnanngcgt cgcangcacg cgtacgtnag ctcggaattc ggctcgaggg gaatgcttac 60

cggtcctgtt accattctca actggtcctt tgttagaaat gaccaaccta gatctgagac 120

cacctaccag attgctttgt ctatcaagga cgaagtggaa gaccttgaaa aggctggcat 180

cactgttatc caaattgatg aagctgcttt gagagagggt cttccactga ggaaatcaga 240

gcaagctcac tacttggact gggctgtcca tgccttcaga atcaccaatg ttggtgtc 298

<210> 2879
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 2879

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gatgggtggg tgcaatccta 60

tggttcncgt tgtgtgaagc caccaatcat ctatggtgat gtgagcngnc caaagccaat 120

gactgtcttc tggtcatctc tggctcagag ctttaccaag cgcccaatga agggaatgct 180

taccggtcct gttaccattc tcaactggtc ctttgttaga aatgaccaac ctagatctga 240

gaccacctac cagattgctt tggctatcaa ggacgaagtg ggaggacctt gaaaaggctg 300

gcatcatgtt 310

<210> 2880
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2880

tcgatgcacg cgtacgtaag ctcggaattc ggctcgagga agccaccaat catctatggt 60

gatgtgagcc gcccaaagcc aatgactgtc ttctggtcat ctctggctca gagctttacc 120

aagcgcccaa tgaagggaat gcttaccggt cctgttacca ttctcaactg gtcctttntt 180

agaaatgacc aacctagatc tgagaccacc taccagattg ctttggctat caaggacgaa 240

gtggaggacc ttgaaaaggc tggcatcact gttatccaa 279

<210> 2881
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2881

tttatgcagc gtacgtnagc tcggaattcg gctcgaggnc aattaaggag gaaattcgca 60

aagttgttga acttcaagaa gagcttgata ttgatgttct tgttcatgga gaaccagaga 120

gaaatgatat ggttgagtac ttcggtgagc aattgtcagg cttgccttca ctgttaatgg 180

gtgggtgcaa tcctatggtt cccgttgtgt gaagccacca atcatctatg gtgatgtgag 240

ccgcccaaag ccaatgactg tcttctggtc atctctggct 280

<210> 2882
<211> 344
<212> nucleic acid
<213> Glycine max

<400> 2882

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag naccactatt ggatccttcc 60

ctcagactgt agaactgagg agggtacgcc gtgaattcaa ggctaacaag atctccgagg 120

aagagtatgt aaagtcaatt aaggaggaaa ttcgcaaagt tgttgagctt caagaagagc 180

ttgatattga tgttcttgtt catggagaac cagagagaaa tgatatggtt gagtacttcg 240

gtgaacaatt gtcaggcttg ccttcaccgt taatgggtgg gtgcaatcct aggttcccgt 300

tgcgtgaagc caccgatcat ctatggtgag tgagccgccc aaag 344

<210> 2883
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2883

acgngtacgt aagctcggaa ttcggctcga gnatggttcc cgttgcgtga agccaccgat 60

catctatggt gatgtgagcc gcccaaagcc aatgaccgtc ttctggtcat ctctggctca 120

gagctttacc aagcgcccaa tgaagggaat gcttaccggt cctgttacca ttctcaactg 180

gtcctttgtt agaaatgacc aacctagatc tgagaccacc taccagattg ctttgtctat 240

caaggacgaa gtggaagacc ttgaaaaggc tggcat 276

<210> 2884
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2884

gtngcangcg tacgtaagct cggaattcgg ctcgaggtta atgggtgggt gcaatcctat 60

ggttcccgtt gtgtgaagcc accantcatc tatggtgatg tgagccgccc aaagccaatg 120

actgtcttct ggtcatctct ggctcagagc tttaccaagc gcccaatgaa gggaatgctt 180

accggtcctg ttaccattct caactggtcc tttgttagaa atgaccaacc tagatctgag 240

accacctacc agattgcttt ggctatcaag gacgaatgga ggaccttg 288

<210> 2885
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 2885

nngcangcac gcntacgtna gctcggaatt cggctcgagn gaccttgctg cttctctcac 60

tacattgnca gggtcttgag ggcattgtgg gcaaagataa gcttgttgtg tccacctcct 120

cctcccttct tcacactgct gttgatcttg ttaacgagac caagttggat gacgagatca 180

agtcatggct agcatttgct gcacaaaaaa ttgttgaagt taacgcattg gctaaggcat 240

tgtctggcaa caaggatgtg gccttcttct ctgctaatgc tgcagctcag gcttcaagga 300

agtcctctcc aaga 314

<210> 2886
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2886

gncgcatgca cgcgtacgta agctcggaat tcggctcgag cttgatttga tcaagggtgg 60

atttcccagc ggaaaatacc tctttgctgg agtggttgat ggaaggaaca tctgggccaa 120

tgaccttgct gcttctctca ctaccttgca gggtcttgag ggcattgtgg gcaaagataa 180

gcttgttgtg tccacctcct cctcccttct tcacactgct gttgatctag ttaacgagac 240

caagttggat gatgagatca agtcatggct agcttttgct gcccaaaaaa tgttgaagtt 300

aacg 304

<210> 2887
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2887

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gcccaaagcc aatgactgtc 60

ttctggtcat ctctggctca gagctttacc aagcgcccaa tgaagggaat gcttaccggt 120

cctgttacca ttctcaactg gtcctttgtt agaaatgacc aacctagatc tgagaccacc 180

taccagattg ctttggctat caaggacgaa gtggaggacc ttgaaaaggc tggcatcact 240

gttatccaaa ttgatgaagc tgctttgaga gaggg 275

<210> 2888
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2888

cgcatatgca gaacttgcac ctgctttgtc tgatctgaat gttcttgttg agacctactt 60

tgctgacatc cctgctgagg cgtacaagac cctcacatct ctgaatggcg tcactgcata 120

tgggtttgat ttggtccgtg gaacccatac tcttgatttg atcaagggtg gatttcccag 180

tggaaaatac ctctttgctg gagtggttga tggaaggaac atctgggcca atgaccttgc 240

tgcttctctc actacat 257

<210> 2889
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2889

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagt gttcttgttg agacctactt 60

tgctgacatc cctgctgngg catacaagac cctcacatct ctgaatggcg tcactgcata 120

tggatttgat ttggtccgtg gaaccaacac tcttgatttg atcaagggtg gatttcccag 180

cggaaaatac ctctttgctg gagtggttga tggaaggaac atctgggcca atgaccttgc 240

tgcttctctc actaccttgc agggtcttga gggcattg 278

<210> 2890
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2890

ctgcacgcgt acgtaagctc ggaattnggc tcgagctcga gccgctcgag ccgaccttga 60

aaaggctggc atcactgtta tccaaattga tgaagctgct ttgngagagg gtcttccact 120

gaggaaatca gagcaagctc actacttgga ctgggctgtc catgccttca gaatcaccaa 180

tgttggtgtc caggatacca cccagatcca cactcacatg tgctactcga acttcaacga 240

catcatccac tccatcatcg acatggacgc cgatgttatc accatgagaa tctcgctc 298

<210> 2891
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2891

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ntccgaggaa gagtatgtta 60

agtcaattaa ggaggaaatt cgcaaagttg ttagaacttc aagaagagct tgatattgat 120

gttcttgttc atggagaacc agagagaaat gatatggttg agtacttcgg tgagcaattg 180

tnangctttg ccttcactgt taatgggtgg gtgcaatcct atggttcccg ttgtgtgaag 240

ccaccaatca tctatggtga tgtgagccgc ccaaagccaa tgactgtctt ctggtcatct 300

ctggctcaga gcttta 316

<210> 2892
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2892

gtcgcangca cgcntacgtn agctcgggaa ttcggctcga gngactggat gctcaacaaa 60

agaagctcaa ccttccaatc cttccaacca ncactattgg atccttccct cagactgtag 120

aactgaggag ggtacgccgt gagttcaagg ctaacaagat ctccgaggaa gagtatgtta 180

agtcaattaa ggaggaaatt cgcaaagttg ttgaacttca agaagagctt gatattgatg 240

ttcttgttca ggagaaccag agagaaatga tatggttgag tacttcggt 289

<210> 2893
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2893

gttactgcac gngtacgtaa gctcggaatt nggctcgagc tcgagccgct atggtgatgt 60

gagccgccca aagccaatga ccgtcttctg gtcatctctg gctcagagct ttaccaagcg 120

cccaatgaag ggaatgctta ccggtcctgt taccattctc aactggtcct ttgttagaaa 180

tgaccaacct agatctgaga ccacntacca gattgctttg tctatcaagg acgaagtgga 240

agaccttgaa aaggctggca tcactgttat ccaaattgat gaagcgcttt gagagagggt 300

cntccactga ggaaatcaga 320

<210> 2894
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 2894

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cgttaatggg tgggtgcaat 60

cctatggttc ccgttgcgtg aagccaccga tcatctatgg tgatgtgagc cgcccaaagc 120

caatgaccgt cttctggtca tctctggctc agagntttac caagcgccca atgaagggaa 180

tgcttaccgg tcctgttacc attctcaact ggtcctttgt tagaaatgac caacctagat 240

ctgagaccac ctaccagatt gctttgtcta tcaaggacga atggaagacc ttgaaaaggc 300

tg 302

<210> 2895
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2895

acgtcgcatg cacgcgtacg tnagctcgga attcggctcg agnttaatgg gtgggtgcaa 60

tcctatggtt cccgttgcgt gaagccaccg atcatctatg gtgatgtgag ccgcccaaag 120

ccaatgaccg tcttctggtc atctctggct cagagcttta ccaagcgccc aatgaaggga 180

ntgcttaccg gtcctgttac cattctcaac tggtcctttg ttagaaatga ccaacctaga 240

tctgagacca cctaccagat tgctttgtct atcaaggacg aatggaagac cttgaaaagg 300

ctggcatcat gtt 313

<210> 2896
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2896

cantcgnang nacgcgtacg taagctcgga attcgggtnc naggaaanta cctctttgct 60

ggagtggttg atggaaggaa catctgggcc aatgaccttg ctgcttctct cactaccttg 120

cagggtcttg agggcattgt gggcaaagat aagcttgttg tgtccacctc ctcctccctt 180

cttcacactg ctgttgatct agttaacgag accaagttgg atgatgagat caagtcatgg 240

ctagcttttg ctgcccaaaa aattgttgaa gttaacgcat ggctaaagca tgtctggcca 300

caaggatgag gg 312

<210> 2897
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2897

gcngcacgcg tacgtaagct cggaattcgg ctcgaggatt gcacccaccc attaacggtg 60

atgtgagccg cccaaagcca atgaccgtct tctggtcatc tctggctcag agctttacca 120

agcgcccaat gaagggaatg cttaccggtc ctgttaccat tctcaactgg tcctttgtta 180

gaaatgacca acctagatct gagaccacct accagattgc tttgtctatc aaggacgaag 240

tggaagacct tgaaaaggct ggcatcactg ttatccaaat tgatgaagct g 291

<210> 2898
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2898

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gctcagatgt tcnttccatc 60

aaccactcca gcnaagataa ncttgtngtg tccacctcct cctcnnttct tcacactgct 120

gtngatnttg ttaacgagac caagttggat gacgagatca agtcatggct agcatttgct 180

gcacaaaaaa ttgttgaagt taacgnattg gctaaggcnt tgtctggcaa caaggatgtg 240

gccttcttnt ctgctaatgc tgcagctcag gcttcaagga agtcntctcc aagagtgacc 300

aacgaggctg tt 312

<210> 2899
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2899

cgcatatgca gaacttgcac ctgctttgtc tgatctgaat gtncttgttg anacctactt 60

tgctgacatc cctgctgagg cgtacaagac cctcacatct ctgaatggcg tcactgcata 120

tgggtttgat ttggtccgtg gaacccatac tcttgatttg atcaagggtg gatttcccag 180

tggaaaatac ctctttgctg gagtggttga tggaaggaac atctgggcca atgaccttgc 240

tgcttct 247

<210> 2900
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2900

tcgcatncac gcgtacgtaa gctcggaatt cggctcgagg ggaatgctta ccggtcctgt 60

taccattctc aactggtcct ttgttagaaa tgaccaacct agatctgaga ccacctacca 120

gattgctttg tctatcaagg acganacngg aagaccttga aaaggctggc anccactgtt 180

ntccaaattg atgaagctgc tttgagagag ggtcttccac tgaggaaatc agagcaagct 240

cactacttgg actgggctgt ccatgccttc agaatcacca atgttggtgt ccaggatacc 300

acccagatcc acactna 317

<210> 2901
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2901

gtctatgcac gcgtacgtaa gctcggaatt cggctcgagc gagaccangt tggatgacga 60

gatcaagtca tggctagcat ttgctgcaca aaaaattgtt gaagttaacg cattggctaa 120

ggcattgtct gncaacaagg atgtggcttc ttctctgcta atgctgcagc tcaggcttca 180

aggaagtcct ctccaagagt gaccaacgag gctgttcaga aggctgctgc tgcattgaag 240

ggttcagatc atcgccgtgc aacaaatgtc agtgccagac tggat 285

<210> 2902
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2902

gtcgcangca cgcgtacgta agctcggaat tcggctcgag nacaagatct ccgaggaaga 60

gtatgtaaag tcaattaagg aggaaattcg caaagttgtt gagcttcaag aagagcttga 120

tattgatgtt cttgttcatg gagaaccaga gagaaatgat atggttgagt acttcggtga 180

acaattgtca ggctttgcct tcaccgttaa tgggtgggtg caatcctatg gttcccgttg 240

cgtgaagcca ccgatcatct atgg 264

<210> 2903
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2903

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctgaattggg ccctgatgtg 60

aacttcacct atgcttctca caaggctgtt gatgaataca aggaggccaa ggcgcttgga 120

gtggatacca ttcccgtact cgttggccct gttacatact tgttgctctc caagcctgcc 180

aagggagtcg agaaatcctt ttctctcctc tctctccttc ccaaggttct tgctgtctac 240

aaggaagtta ttgctgacct taaggcagct ggtgcttcat ggattcaatt gatgagcct 299

<210> 2904
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 2904

gttgcatgca gcgtacgtaa gctcggaatt cggctcgagg gaagttattg cngaccttaa 60

ggcagctggt gcttcatggn ttcaatttga tgagcctacc cttgtcttgg accttgaatc 120

tcacaagttg caagctttca ctgacgcata tgcanaactt gcacctgctt tgtctgatct 180

gaatgttctt gttgagacct actttgctga catccctgct gaggcgtaca agaccctcac 240

atctctgaat ggcgtcactg catatgggtt tgatttggtc cgtggaaccc atactcttga 300

tttga 305

<210> 2905
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2905

actacgcatg cacgcgtacg taagctcgga attcggctcg agtctggctc agagctttac 60

caagcgccca atgaagggaa tgcttacncg tcctgttacc attctncaac tggtcctttg 120

ttagaaatga ccaacctaga tctgagacca cctaccagat tgctttgtct atcaagntga 180

agtggaagac cttgaaaagg ctggcatcac tgttatccaa attgatgaag ctgctttgag 240

agagggtctt ccactgagga aatcagagca agctcactac ttggactggg ctgtccatg 299

<210> 2906
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2906

cacgcangca cgcgtacgta agctcggaat tcggctcgag gtggatttcc cagtggaaaa 60

tacctctttg ctggagtggt tgatggaagg aacatctggg ccaatgacct tgctgcttct 120

ctcactacat tgcagggtct tgagggcatt gtgggcaaag ataagcttgt tgtgtccacc 180

tcccctccct tcttcacact gctgttgatc ttgttaacga gaccaagttg gatgacgaga 240

tcaagtcatg gctagcattt gctgcacaaa aaattgttga agttaa 286

<210> 2907
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2907

agtcgctgcn nncgtcggaa ttcggctcga ggtctacaag gaagtnattg ctggacctta 60

aggcagctgg tgcttcatgg attcaatntg atgagcctac ccttatcttg gaccttgaat 120

ctcanaagtt gcaagctttc actgacgcat atgcagaact tgcacctgct ttgtctgatc 180

tgaatgtnct ngtngagacn cactttgctg acatccctgc tgaggcgtac aagaccctca 240

catctctgaa tggcgtcact gcatatgggt ttgatttggt ccgtggaacc catactcttg 300

atttgatcaa ggg 313

<210> 2908
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2908

acgtcgcang cacgcgtacg taagctcgga attcggctcg agtggattct caacaaaaga 60

agctcaacct tccaatcctt ccaaccacca ctattggntc cttccctcag actgtagaac 120

tgaggagggt acgccgtgaa ttcaaggcta acaagatctc cgaggaagag tatgtaaagt 180

caattaagga ggaaattcgc aaagttgttg agcttcaaga agagcttgat attgatgttc 240

ttgttcatgg agaaccagag agaaatgata tggt 274

<210> 2909
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2909

gcatgcncgc gtncgtnagc tcggaattcg gctcgagtct ggctcagagc tttaccaagc 60

gcccaatgaa gggaatgctt accggtcctg ttaccattct caactggtcc tttgttagaa 120

atgaccaacc tagatctgag accacctacc agattgcttt gtctatcaag gacgaagtgg 180

aagaccttga aaaggctggc atcactgtta tccaaattga tgaagctgct ttgagagagg 240

gtcttccact gaggaaatca gagcaagctc atactt 276

<210> 2910
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2910

cacaagtngc aagcnttcac tgacgcatat gcagaacttg cacctgcttt gtctgatctg 60

aatgttcttg ttgagaccta ctttgctgac atccctgctg aggcgtacaa gaccctcaca 120

tctctgaatg gcgtcactgc atatgggttt gatttggtcc gtggaaccca tactcttgat 180

ttgatcaagg gtggatttcc cagtggaaaa tacctctttg ctggagtggt tgatggnagg 240

nacatctggg cc 252

<210> 2911
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2911

gtcgcangca cgcgtacgta agctcggaat tcggctcgag attggctaag gcattgtctg 60

gcaacaagga tgtggccttc ttctctgcta atgctgcagc ttcaggcttc aaggaagtcc 120

tctccaagag tgaccaacga ggctgttcag aaggctgctg ctgcattgaa gggttcagat 180

catcgccgtg caacaaatgt cagtgccaga ctggntgctc aacaaaagaa gctcaacctt 240

ccaatccttc caaccaccac tattgntcct tcctcagacg tgtgaa 286

<210> 2912
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2912

cgtcgnngca cgcgtacgtn agctcggnan tnggctcgag ctcgagccgc aagagtgacc 60

aacgaggctg ttcagaaggc tgctgctgca ttgaagggtt cngatcatcg ccgtgcaaca 120

aatgtcagtg ccagactgga ttctcaacan aagaagctca accttccaat cctgccaacc 180

accactattg gatccttccc tcagactgta gaactgagga gggtacgccg tgaattcnag 240

gctaacaaga tctccgagga agagtatgta nngtcaatta aggnggaaat tcg 293

<210> 2913
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2913

gtcnaatgca cgcgtacgta agctcggaat tcggctcgag cgaggctgtt cagaaggctg 60

ctgctgcatt gaagggttca gatcatcgcc gtgcaacaaa tgtcagtgcc agactggatt 120

ctcaacaaaa gaagctcaac cttccaatcc tgccaaccac cactattgga tccttccctc 180

agactgtaga actgaggagg gtacgccgtg aattcaaggc taacaagatc tccgaggaag 240

agtatgtaaa gtcaattaag gaggaaattc gcaa 274

<210> 2914
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2914

acantcatgc acgcgnagta gtcggaatnc ggctcgaggt tgagcnncaa gnagancttg 60

atattgnngt tcntgntcat ggaganccan agagaaatga tatggttgag tacttcggtg 120

aacaattgtc aggctttgct ttcaccgtta atgggtgggt gcaatcctat ggntcccgtt 180

gcgtgaagcc ancgatcatc tatggtgatg tnagccgccc aaagccaatg accgtnttct 240

ggtcatctct ggctcagagc tttaccaagc gccaatgaag gga 283

<210> 2915
<211> 534
<212> nucleic acid
<213> Glycine max

<400> 2915

gagggattnn aaantctttc nanagccatg ttgtnccccgt ttcggaattc ccgctcgacc 60

cacgcgtccg nncacncgtc cgctgcagaa gacgactgaa nggagagctt gatattgatg 120

ttcttgggca tggagaacca gagagaantg atgtggttga gtacttcggt gagcaattgt 180

caggctttgc cttcactgtt aatgggtggg tgcaatccta tggttcccgt tgtgtgaanc 240

caccnatcat ctatggtgat gtgagccccc aaanccaatg actgtcttct ggtcatctct 300

ggctcananc tttaccaatc gcccnntgaa anggaatnct tnccgggcct gttacattnt 360

naacttgggc ctttntttna anatnancaa cctatttntt annccnctnc nttattnttt 420

tnnctttna ggatnatnng nttgnnnttt tanaaanggg ttnngatnat ttnttttntn 480

natnttnttn atnnnnnntn tnntnaaang ntnttntnat tnngnaataa natt 534

<210> 2916
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2916

gttaacgaga ccaagcnanc catgacttga tctcatcatc caacttggtc tcgttaacta 60

gatcaacagc agtgtgaaga agggaggagg agatcaagtc atggctagct tttgctgccc 120

aaaaaattgt tgaagttaac gcattggcta aagcattgtc tggccacaag gatgaggcct 180

tcttctctng taatgctgct nctctggctt caaggaagtc ttctccaaga gtgaccaacg 240

aggctgttca gaaggctgct gctgcattga agggttcaga tcatcgccgt gcaacaa 297

<210> 2917

<211> 410
<212> nucleic acid
<213> Glycine max

<400> 2917

gtatggtgct ggaattggcc ctggtgtcta tgacatccac tccccaagaa taccaccaac 60

tgaagaaatc gctgacagaa tcaataagat gcttgcagtg ctcgagaaga acatcttgtg 120

ggtcaaccct gactgtggtc ttaagacccg caagtacact gaagtgaagc cagccctcac 180

aaacatggtt gccgcagcaa aactcatccg taacgaactt gccaagtgaa tggtataaga 240

aagtagaatc tacaagttca ttggttctgc ttttataata caccaaagaa aaattttcta 300

tattgggttg tttcaataac cgtgtgtgga atatttagat gttttagcat gctccgtgaa 360

caattgatcc tcctcaaacc ctctcccctt aattttccca actcccggtt 410

<210> 2918
<211> 333
<212> nucleic acid
<213> Glycine max

<400> 2918

acgtcgnatn nnngcgnagg ananngtcgc angcacgcgt acgtaagctc ggaattcggc 60

tcgagnnagg agggtacgcc gtgagttcaa ggctaacaag atctccgagg aagagtatgt 120

taagtcaatt aaggaggaaa ttcgcaaagt tgttgaactt caagaagagc ttgatattga 180

tgttcttgtt catggaganc cngggngaan tgatatggtt gagtacttcg gtgagcaatt 240

gtcaggcttg ccttcactgt taatgggtgg gtgcaatcca anggtcccgt tgtgtnaagc 300

caccaatcca ctatggtgat gtgagccgcc caa 333

<210> 2919
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2919

cgtcgcgngc acgcgtacgt aagctcggga nttcggctcg agcaagcncc caatgaaggg 60

antgcttacc ggtcctgtta ccattctcaa ctggtccttt gttagaaatg accaacctag 120

atctgagacc acctaccaga ttgctttgtc tatcaaggac gaagtggaag accttgaaaa 180

ggctggcatc actgttatcc agnttggtga agctgctttg agagagggtc ttccactgag 240

gaaatcagan caagctcact attggatggg tgtccatgcc ttcagaatca ccangttggt 300

gtccaggata cca 313

<210> 2920
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2920

ggatgacgag atcaagtcat ggctagcatt tgctgcacaa aaaattgttg aagttaacgc 60

attggctaag gcattgtctg gcaacaagga tgtggccttc ttctctgcta atgctgcagc 120

tcaggcttca aggaagtcct ctccaagagt gaccaacgag gctgttcaga aggctgctgc 180

tgcattnaag ggttcagntc ancgncgtnc aacanntcnc agccnnantg ganantcncn 240

aaaaaaggct cncccnncc 259

<210> 2921
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2921

tcgctgcacg cgtacgtnag ctcggaattc ggctcgaggg ataccgttcc ggtcctcgtt 60

ggccctgtta catacctgtt gctctccaag cctgccaagg gagttgagaa atccttttct 120

ctcctctctc tccttcccaa ggttcttgct gtctacaagg aagttattgc tgaccttaag 180

gcagctggtg cttcatggat tcagtttgat gagcctaccc ttgtcttgga ccttgagtct 240

cacaagttgc aagcattcac tgacgcatat gcagaacttg cgcctg 286

<210> 2922
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2922

gtgcaatcct atggttcccg ttgcgtgaag ccaccgatca tctatggtga tgtgagccgc 60

ccaaagccaa tgaccgtctt ctggtcatct ctggctcaga gctttaccaa gccccaatga 120

agggaatgct taccggtcct gttaccattc tcaactggtc ctttgttaga aatgaccaac 180

ctagatctga gaccacctac cagattgctt tgtctatcaa ggacgaatgg aagaccttga 240

aa 242

<210> 2923
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2923

gcgtacgtaa gctcggaatt cggctcgagt cagatcatcg ccgtgcaaca aatgtcagtg 60

ccagactgga ttctcaacaa aagaagctca accttccaat cctgccaacc accactattg 120

gatccttccc tcagactgta gaactgagga gggtacgccg tgaattcaag gctaacaaga 180

tctccgagga agagtatgta agtcaattaa ggaggaaatt cgcaaagttg ttgagcttca 240

agaagagctt gatattgatg ttcttgttca 270

<210> 2924
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 2924

agtcnnangc acgcntacgt aagctcggaa ttcggctcga gggtggattt cccagtggaa 60

aatacctctt tgctggagtg gttnatggaa ggaacatctn gngccaatga ccttgctgct 120

tctctcacta cattgcaggg tcttgagggc attgtnggca aagataagct tgttgtgtcc 180

acctcctcct cccttcttca cactgctgtt gatcttgtta acgagaccaa gttggatgac 240

gagatcaagt catggctagc atttgctgca caaaaaattg tgaagttaac gc 292

<210> 2925
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2925

aanatttnnc gtcgcatgca tgcgtacgta agctcggaat tcggctcgag gagaaatgat 60

atggttctcc atgaacaaga acatcaatat caagctcttc ttgaagttct tgttcatgga 120

gaaccagaga gacnatgata tggttgagta cttcggtgag caattgtcag gctttgcctt 180

cactgttaat gggtgggtnc natcctatgg ttcccgttgt gtgaagccac caatcatcta 240

tggtgatgtg agccgcccaa agccaatgac tgtcttctgg tcatctctgg ctcagagctt 300

taccaagcgc cc 312

<210> 2926
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2926

tcgcangcac gcgtacgtna gctcggaatt cggctcgagc aagtggttcg acaccaacta 60

ccactggnat tgtccctgaa ttgggccctg atgtgaactt cacctatgct tctcacaagg 120

ctgttgatga atacaaggag gccaaggcgc ttggagtgga taccattccc gtactcgttg 180

gccctgttac atacttgttg ctctccaagc ctgccaaggg agtcgagaaa tccttttctc 240

tcctctctct ccttcccaag gttcttgctg tctacaagga agttatt 287

<210> 2927
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2927

aagccaccga tcatctatgg tgatgtgagc cgcccaaagc caatgaccgt cttctggtca 60

tctctggctc agagctttac caagcgccca atgaagggaa tgcttaccgg tcctgttacc 120

attctcaact ggtctttgtt agaaaatgac caacctagat ctgagacaac taccagattg 180

ctttgtctat ccaaggacga ntnggaagac cttgaaaagg ctggcatcac tgttatccaa 240

attgatgaag ctgctttg 258

<210> 2928
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 2928

gtcgcangca cgcgtacgtn agctcgggaa ttcggctcga gctggaattg gccctggtgt 60

ctatgacatc cactccccaa gaataccacc aactgaagaa atcgctgaca gaatcaataa 120

gatgcttgca gtgctcgaga agaacatctt gtgggtcaac cctgactgtg gtctcaagac 180

ccgcaagtac actgaagtga agccagccct cacaaacatg gttgccgcag caaaactcat 240

ccgtaacgaa cttgccaagt gaatggtata agaaagtaga atctacaagt tcattggttc 300

tgcttttata atacaccaaa gaaaaatttt ctata 335

<210> 2929
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2929

annntangta cgcgtacgta agctcggaat tcggctcgag caccaactac cactttattg 60

tccctgaatt gggccctgat gtgaacttca cctatggttc tcacnaggct gttgatgaat 120

acaaggnggc caaggcgctt ggagtggata ccattcccgt actcgttggc cctgttacat 180

acttgttgct ctccaagcct gccaagggag tcgagaaatc cttttctctc ctctctctcc 240

ttcccaaggt tcttgctgtc tacaaggaag ttattgctg 279

<210> 2930
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2930

gtcgcangca cgcgtacgtn agctcggaat tcggctcgag nnctcgctcc gatgagaagc 60

tcctgtcagt cttccgtgaa ggtgtgaagt atggtgctgg aattggccct ggtgtctatg 120

acatccactc cccaagaata ccaccaactg aagaaatcgc tgacagaatc aatacgatgc 180

ttgcagtgct cgagaagaac atcttgtggg tcaaccctga ctgtggtctc aagacccgca 240

agtacactga atgaagccag ccctcacaaa catggttgcc gg 282

<210> 2931
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2931

ccttccaatc cttccaacca ccactattgg ntccttccct cagactgtag aactgaggag 60

ggtacgccgt gagttcaagg ctaacaagat ctccgaggaa gagtatgtta agtccaatta 120

aggaggaaat tcgcaaagtt gttgaacttc aagaagagct tgatattgat gttcttgttc 180

atggagaacc agagagaaat gatatggttg agtacttcgg tgagcattgt caggctttgc 240

ctcactgtta atgggtgggt g 261

<210> 2932
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2932

ctcccnnacg tngcatgcac gcgtacgtna gctcgngaat tcggctcgag gaaatccttt 60

tctctcctct ctctccttcc caaggttctt gctgtctaca aggaagttat tgctgacctt 120

aaggcagctg gtgcttcatg gattcaattt gatgagccta cccttgtctt ggaccttgaa 180

tctcacaagt tgcaagcttt cactgacgca tatgcagaac ttgcacctgc tttgtctgat 240

ctgaatgttc ttgttgagac ctactttgct gacatccctg ctgaggcgta caagaccc 298

<210> 2933
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 2933

tcgcangcac gcgtacgtna gctcggaatt cggctcgagc ttgttgctct ccaagcctgc 60

caagggagtc gagaaatcct tttctctcct ctctctcctt cccaaggttc ttgctgtcta 120

caaggaagtt attgctgacc ttaaggcagc tggtgcttca tggattcaat ttgatgagcc 180

tacccttgtc ttggaccttg aatctcacaa gttgcaagct ttcactgacg catatgcaga 240

acttgcacct gctttgtctg atctgaatgt tcttgttgag actactttgc tgacatcc 298

<210> 2934
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2934

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gcaaggcgct tggagtggat 60

accattcccg tactcgttgg ccctgttaca tacttgttgc tctccaagcc tgccaaggga 120

gtcgagaaat ccttttctct cctctctctc cttcccaagg ttcttgctgt ctacaaggaa 180

gttattgctg accttaaggc agctggtgct tcatggattc aatttgatga gcctaccctt 240

gtcttggacc ttgaatctca caagttgcn 269

<210> 2935
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2935

tgctggaatt ggccctggtg tctatgacat ccactcccca agaataccac caactgaaga 60

aattgctgac agaatcaaca agatgctggc agtgctcgag aagaacatct tgtgggtgaa 120

ccctgactgt gggctcaaga cccgtaagta cactgaggtg aagccagccc tcacaaacat 180

ggttgccgca gcaaaactca tccgcaacga acttgccaag tgaatggtat aagaaagtag 240

aatcttccaa gtcatttggt t 261

<210> 2936
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2936

cgtncgtnag ctcggaattc ggctcgagct tctggtcatc tctggctcag agctttacca 60

agcgcccaat gaagggaatg cttaccggtc ctgttaccat tcncaactgg tcctttgtta 120

gaaatgacca acctagatct gagaccacct accagattgc tttgtctatc aaggacgaag 180

tggaagacct tgaaaaggct ggcatcactg ttatccaaat tgatgaagct gctttgagag 240

agggtctcca ctgaggaaat ca 262

<210> 2937
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2937

acgcgtacgt aagctcggaa ttcggctcga ggtgaagtat ggtgctggaa ttggccctgg 60

tgtctatgac atccactccc caagaatacc accaactgaa gaaattgctg acagaatcaa 120

caagatgctg gcagtgctcg agaagaacat cttgtgggtg aaccctgact gtgggctcaa 180

gacccgtaag tacactgagg tgaagccagc cctcacaaac atggttgccg cagcaaaact 240

ncatccgcaa cgaattgcca atgatggtat aagaaataga 280

<210> 2938
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2938

angnncctca catctctgaa nggcgtcact gcatatgggn ttgatttgnt ccgtgggancc 60

catactcttg atttnatcaa gggtggattt cccagtggaa aatacctctt tgctggagtg 120

gttgatggaa ggaacatctg ggccaatgac cttgctgctt ctctcactac attgcagggt 180

cttgagggat tgtgggcaaa gataagcttg ttgtgtccac ctcctcctcc cttcttcaca 240

ctgc 244

<210> 2939
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2939

tctatgcacg cgtacgtnag ctcggaattc ggctcgagca atgactgtct tctggtcatc 60

tctggctcag agctttacca agcgcccaat gaagggaatg cttaccggtc ctgttaccat 120

tctcaactgg tcctttgtta gaaatgacca acctagatct gagaccacct accagattgc 180

tttggctatc aaggacgaag tggaggacct gaaaaggctg gcatcactgt tatccaaatt 240

gatgaagctg cttgagagag ggtctgccat gaggaaatca gaacaagct 289

<210> 2940
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 2940

ncgtcgcang cacgcgtacg tnagctcgga attcggctcg agggttcccg ttgcgtgaag 60

ccaccgatca tctatggtga tgtgagccgc ncaaagccaa tgaccgtctt ctggtcgtct 120

ctggctcaga gctttaccaa gcgcccaatg aagggaatgc ttaccggtcc tgttancatt 180

ctcaactggt cctttgttag aaatgaccaa cctagatctn cagaccacct accagattgc 240

tttgtctatc aaggacgngt ggaagacctt gaaaaggctg gcatcactgt tatccaaatt 300

g 301

<210> 2941
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2941

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc cagattgctt tggctatcaa 60

ggacgaagtg gaggaccttg aaaaggctgg catcactgtt atccaaattg atgaagctgc 120

tttgagagag ggtctgccac tgaggaaatc agaacaagct cactacttgg actgggctgt 180

ccatgccttc agaatcacca atgttggtgt gcaggatacc actcagatcc acacccacat 240

gtgtactcca antcaacgac atcatnccat ccatcanggg atngggcggc gattt 295

<210> 2942
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2942

cgtcgcangc acgcgtacgt nagctcggna ttcggctcga gngcgtacaa gancctcaca 60

tctctgaatn gcgtcantgc atatgggttt gatttagtcc gtggaaccca tactcttgat 120

ttgatcaagg gtggatttcc cagtggaaaa tacctctttg ctggantggt tnatggangg 180

nncatctggg ccaatgacct tgcngcntct ctcacnacat tncagggtct tgagggcatt 240

gtgggcnaag atannctngt tgtgtccacc tcctccnccc ttcntcacac tgctg 295

<210> 2943
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2943

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ttattgctga ccttaaggca 60

gctggtgctt catggattca atttgatgag cctacccttg tcttggacct tgaatctcac 120

aagttgcaag ctttcactga cgcatatgca gaacttgcac ctgctttgtc tgatctgaat 180

gttcttgttg agacctactt tgctgacatc cctgctgagg cgtacaagac cctcacatct 240

ctgaatggcg tcactgcata tgggtttga 269

<210> 2944
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2944

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tggtgtctat gacatccact 60

ccccaagaat accaccaact gaagaaattg ctgacagaat caacaagatg ctggcagtgc 120

tcgagaagaa catcttgtgg gtgaaccctg actgtgggct caagacccgt aagtacactg 180

aggtgaagcc agccctcaca aacatggttg ccgcagcaaa actcatccgc aacgaacttg 240

ccaagtgaat ggtataagaa agtagaatct tccaagtcat ttggttctgc tttatattat 300

aatacaccaa ag 312

<210> 2945
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 2945

gangcacgcg tacgtnagct cggaattcgg ctcgagccca gcggaaaata cctctttgct 60

gncagtggtt gatggaagga acatctgggg caatggacct ttgtggnttc tcctcactac 120

cttggcaggg tcttganggg cattgtgggc aaagataagc ttgttgtgtc cacctcctcc 180

tcccttcttc acactgctgt tgacccagtt aacgagacca agttggatga tgagatcaag 240

tcatggctag cttttgctgc ccaaaaaaat tgttgaagtt aacgcattgg ctaaagcatt 300

gtctggccac aaggatgagg 320

<210> 2946

<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2946

nnangcatgc acgcgtacgt aagctnggaa ttcggctcga gctgaatgnn gtcactgnca 60

tatgggnttg atttggtccg tggaacccat actgcttgat ttgatcaagg gtggatttcc 120

cagtggaaaa tacctctttg ctggagtggt tgatggaagg aacatctggg ccaatgacct 180

tgctgcttct ctcactacat tgcagggtct tgagggcatt gtgggcaaag ataagcttgt 240

tgtgtccacc tcctcctccc ttcttcacac tgctgttgat ccttgttaac gagaccaag 299

<210> 2947
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2947

aataatatgc acgcgtacgt aagntcggaa ttcggctcga gacaagttgc aagcattcac 60

tgacgcntat gcagaacttg cgcctgcttg ggtggtttn aatgtncttg ttgagaccga 120

ctttnctgac atccctgctg aggcatacaa gaccctcaca tctctgaatg gcgtcactgc 180

atatggattt gatttggtcc gtggaaccaa cactcttgat ttgatcaagg gtggatttcc 240

cancggaaaa tacctctttg ctggagtgg 269

<210> 2948
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 2948

tcgcatgcac gcgtacgtaa gctcgggaat tcggctcgag attggatcct tccctcagac 60

tgtagaactg aggagggtac gccgtgagtt caaggctaac aagatctccg aggaagagta 120

tgttaagtca attaaggagg aaattcgcaa agttgttgaa cttcaagaag agctgatatt 180

gatgttctgt tcatggagaa ccagagagaa atgatatggt tgagtacttc ggtgagcaat 240

tgtcaggctt tgcttcactg ttaatgggtg ggtgcatcct atggttcccg ttgt 294

<210> 2949

<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2949

nacntngcat gcacgcgtac gtaagctcgg aattcggctc gaggttacca ttctcaactg 60

gtcctttgtt agaaatgacc aacctagatc tgagaccacc taccagattg ctttgtctnc 120

caaggacgaa gtggaagacc ttgaaaagnc tggcatcact gttatccaaa ttnatgaagc 180

tgctttgann gagggtcttc cactnnggaa atcagagcan ntcactactt gganc gggct 240

gtccatntnt tcagaatcac nnntgttggt gtccnngata 280

<210> 2950
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2950

atgcncgcgt acgtnagctc ggaattcggc tcgagcattc ccgtactcgt tggccctgtt 60

acatacttgt tgctctccaa gcctgccaag ggagtcgaga aatccttttc tctcctctct 120

ctccttccca aggttcttgc tgtctacaag gaagttattg ctgaccttaa ggcagctggt 180

gcttcatgga ttcaatttga tgagcctacc cttgtcttgg acttgaatct cacaagttgc 240

aagctttcat gacgcatatg cagaattgca ctgt 274

<210> 2951
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2951

ncgtcgcatg cacgcgtacg taagctcgga attcggctcg agcttgtctt ggaccttgaa 60

tctcacaagt tgcaagcttt cactgangca tatgcagaac ttgcacctgc tttgtctgat 120

ctgaatgttc ttgttgagac ctactttgct gacatccctg ctgaggcgta caagaccctc 180

acatctctga atggcgtcac tgcatatggg tttgatttgg tccgtggaac ccatactctt 240

gatttgatca agggtggatt tcccagtgga 270

<210> 2952

<211> 549
<212> nucleic acid
<213> Glycine max

<400> 2952

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tcncgggtcg acccacgcgt ccggcagatc tgagaccacc taccagattg ctttgtctat 120

caaggacgaa gtggaagacc tggaaanggc tggcatcact gttatccana ttgatgaagc 180

tgctttgaga gagggtcttc cactgaggaa atcagagcaa gctcactact tggactgggc 240

tgtccatgcc ttcagaatca ccaatgttgg tgtccaggat accacccagg tacactcttt 300

tggatcatcg canatcactg aattanaaat ttttttgtt natcctnatt ttcacatatg 360

tttggnataa ncaantttnc gtatngacag atccannact canatgtgnc tactcggact 420

tcaancgact ntnntccaat tncattannt nancntggan tgcntgangt ntatgnncnn 480

nttnnnannt ttntgtngna tganaagtag gttnntnttn atngntatag tnnnanggtt 540

ttnttgtng 549

<210> 2953
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 2953

nntcgcatgc atgcgtacgt nagctcggaa ttcggctcga gctcgagccg attcggctcg 60

agttccaatc ctgctcaacc accacnnttg gatccttccc tacagactgt agaactgagg 120

anggtacgcc gtgaattcna ggctaacaag atctccgagg aagagtatgt naagtcaatt 180

aaggaggaaa ttcgcaaagt tgttgagctt caagaagagc ttgatattga tgttcttgtt 240

catggagaac cagagagaaa tgatatggtt gagtnttcgg tgaacaattg tcaggcttgc 300

ttcaccgtta atgggtg 317

<210> 2954
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2954

anatcgcang cacgcntacg taagctcgga attcggctcg agttgngcnc tgntgtggac 60

ttcacctatg ctttctcana aggctgtnga tgaatacnag gngggccaag ggcgcttnga 120

gtggatacng ttccggncct cgttggcnct gttacatagc tgttgctctc caagcctgcc 180

aagggagttg ngaaatcctn ttctctcctc tctctccntc ncaaggttct tgctgtctac 240

aaggaagtta ttgntgacct taaggcagct ggtgcttcat ggattcagtt tgatgagcct 300

acccttggtc ttggaccttg n 321

<210> 2955
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2955

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caaggctaac aagatctccg aggaagagta tgtaaagtca attaagggag gaaattcgca 120

aagttgttga gcttcaagaa gagcttgata ttgatgttct gttcatggag aaccagagag 180

aaatgatatg gttgagtact cggtgaacaa ttgtcaggct tgcctcaccg ttaatgggtg 240

ggtgcaatcc tatggttccc gttgcgtgaa gccaccgatc atctatggtg atgtgagccg 300

cccaaagcca tgaccgtc 318

<210> 2956
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2956

ncgcatgcac gcgtacgtna gctcggaatt cggctcgagg gaggccaagg cgcttggagt 60

ggataccgtt ccggtcctcg ttggccctgt tacatacctg ttgctctcca agcctgccaa 120

gggagttgag aaatcctttt ctctcctctc tctccttccc aaggtcttgc tgtctacaag 180

gaagttattg ctgaccttaa ggcagctggt gcttccatgg attcagttgg nggagctaac 240

cctggtctgg gacctgnngt 260

<210> 2957
<211> 247
<212> nucleic acid

<213>   Glycine max

<400>   2957

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gctgccactg aggaaatcag   60

aacaagctca ctaccntgga ctgggctgtc catgccttca gaatcnncna tnttggngng 120

cangatacna ctcagatcca cacccacatg tgctactcca acttcaacga catcatccac 180

tccatcatcg acatggacgc tgatgttatc accattgaga actctcgctc cgcntgagaa 240

gctcctg   247

<210>   2958
<211>   187
<212>   nucleic acid
<213>   Glycine max

<400>   2958

gggaatgctt ancggtcntg ttancantct caanngg tcc tttgttagaa atgaccaacc   60

tagatctgag accanctacc agattgcttt gtctatcaag gacgangtgg aagaccntga 120

aaaggctggc atcantgtna tccaaattga tgaagctgct tggagagagg gttncccagt 180

gangaat   187

<210>   2959
<211>   250
<212>   nucleic acid
<213>   Glycine max

<400>   2959

aataccacca actgaagaaa ttgctgacag aatcaacaag atgctggcag tgctcgagaa   60

gaacatcttg tgggtgaacc ctgactgtgg gctcaagacc cgtaagtaca ctgaggtgaa 120

gccagccctc acaaacatgg ttgccgcagc aaaactcatc cgcaacgaac ttgccaagtg 180

aatgggtata ggaagtngan tttccaagtn atggggtccg ntttaattta aaaccccccc 240

aaaaaaattt   250

<210>   2960
<211>   293
<212>   nucleic acid
<213>   Glycine max

<400> 2960

gtcgcangca cgcgtacgta agctcggaat tcggctcgan ctcgagccga atcggctcga 60

gataccacca actgaagaaa ttgccgacag aatcaacaag angctggcag tgctcgagaa 120

gaacatcttg tgggtgaacc ctgactgtgg gctcaagacc cgtaagtaca ctgaggtgaa 180

gccagccctc acaaacatgg ttgccgcagc aaaactcatc cgcaacgaac ttgccaagtg 240

aatggtataa gaaagtagaa tcttccaagt catttggttc tgctttatat tat 293

<210> 2961
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2961

cnagnattca ctgacgcata tgnagaactt gcgccacgct ttgtctggtt tgacatgttc 60

ttnttgagac ctactttggc tgacatccct gctgaggcat acaagaccct cacatctctg 120

aatggcgtca ctgcatatgg atttgatttg gtccgtggaa ccaanactct tgatttgatc 180

aagggtggat ttcccanggg aaaatacttt tttgggggan tgntgatgga agganсattg 240

ggccaatgac tttgctgttt t 261

<210> 2962
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2962

ngtcgcatgc acgcgtacgt aagctcggaa ttcggntcga gggagtggat accgttccgg 60

tcctcgntgg ccctntnaca tacctgttgc tnctccaagc ctgccaaggg agttgagaaa 120

tcctttctct cctctntntn cttcgnaagg ntnttgcngt ctanaaggaa gtnattgntg 180

accttaaggc agctggtgct tcatggattc agtttgatga gcctaccctt gtcttggacc 240

ttgngtctca caagttgcaa gcattcagtg ccgcana 277

<210> 2963
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 2963

agactgtaga actgaggagg gtacgccgtg agttcaaggc taacaagatc ctccgaggaa 60

gagtatgtta agtccaatta aggaggaaat tcgcaaagtt gttgaacttc aagaagagct 120

tgatattgat gttcttgttc atggagaacc agagagaaat gatatggttg agtacttcgg 180

tgagcaattn tnaggctttg ccttcactgt taatggntgg gtgcantcca tggttcccgt 240

tgtgtgaagc aacaatnnac caaggnnatt aacccgccca aagccattga ctt 293

<210> 2964
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2964

accaactgaa gaaattgctg acagaatcaa caagatgctg gcagtgctcg agaagaacat 60

cttgtgngtg aaccctgact gtgggctcaa gacccgtaag tacactgagg tnaagccagc 120

cctcacaaac atggttgccg cagcaaaact catccgcaac gaacttgcca agtgaatggt 180

ataagaaagt agaatcnnac caagtcattt ggttctgctt tatatta 227

<210> 2965
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2965

ntcgcangca cgcgtacgta agctcggaat tcggctcgag gtgaccaacg aggctgttca 60

gaaggntgct gctgcattga agggtncaga tcatcgccgt gcaacaaatg tcagtgccag 120

actggattct caacaaaaga agctcaacct tccaatcctg nccaaccacc actatnggat 180

ccttccctca gactgtagaa ctgaggaggg nagcngngaa ttcaaggcta acaagatctc 240

cgaggaagag tatgtaaagt caattaagga ggaaattcgc aaagttgttg 290

<210> 2966
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2966

aagacctcac atctctgant gtncgtcant gcatatgggt ttgatttggt ccgtggaagc 60

atactcttga tttgatcaag ggnggatttc ccagtggaga atacctcttt gctggagtgg 120

ttgatggaan gaacatcngg gccaatgacc ttgctgcttc tcncactaca tgcagggtct 180

tgagggcatt gtgggcaaag ataagcttgt tgtgnccacc tcnncctccc ttctcacact 240

gctgtngatc ntgtna 256

<210> 2967
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 2967

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tcgancgggc tcgagatcca ctccccactg aataccacca actnctagan attncctgac 120

agaatcaaca agatgcacgc agtgctcgag aagaacatct tgtgggtgaa ccctgactgt 180

gggctcaaga cccgtaagta cactgaggtg aagccagccc tcacaaacat ggttgccgca 240

gcaaaactca tccgcaacga acttgccaag tgaatggtat aagaaagtag aatcttccaa 300

gtcatttggt tctgtttata ttataataca 330

<210> 2968
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2968

tcgcangcac gcgtacgtaa gctcgggttc gacaccanct acnacatnaa ttgtccctga 60

attgggccct gatgtgaact tcacctatgn cnctcacaag gctgttgatg aatacaagga 120

ggccaaggcg cttggagtgg ataccgttcc ggtcctcgnt ggccctgtta catacctgtt 180

gctctccaag cctgccaagg gagtnagaaa gccntttcgc tccnctctct ccggcccaag 240

gacttgctgt cnacaaggaa gnnattgcng accngaangc agcnggngca tcanggatca 300

gttnga 306

<210> 2969
<211> 215
<212> nucleic acid

<213> Glycine max

<400> 2969

tnagctcgga attcggctcg agcanggcgt tggagtggat accgttccgg tcctcgttgg 60

ccctgttaca tacctgttgc tcctccaaag cctgccaagg gagttgagaa atccttttct 120

ctcctctctc tccttcccaa ggttcttgct gtctacaagg aagttattgc tgaccttaag 180

gcagctggtg cttcatggat tcagtttgat gagcc 215

<210> 2970
<211> 172
<212> nucleic acid
<213> Glycine max

<400> 2970

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcgcatatgc agaacttgcg 60

cctgctttgt ctggtttgaa tgttcttgtt gagacctact ttgctgacat ccctgctgag 120

gcatacaaga ccctcacatc tctgaatggc gtcactgcat atggatttga tt 172

<210> 2971
<211> 170
<212> nucleic acid
<213> Glycine max

<400> 2971

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ngcttctcac aaggctgttg 60

atgaatacaa ggaggccaag gcgcttggag tggataccgt tccggtcctc gttggccctg 120

ttacatacct gttgctctcc aagcctgcca agggagttga gaaatccttt 170

<210> 2972
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2972

gtcgcangcn cgcgtacgtn agctcgtcaa ttcggctcga gnacttgttn gctctccaag 60

cctgnccaag ggagtcgaga aatccctttt ctctcctctc tctccttccc aaggttcttg 120

ctgtctacaa ggaagttatt gctgacctta aggcagntgg tgcttcatgg attcaatttg 180

atgagcctac cctgtctgga ccttgaatct cacaagttgc aagctttcac tgacgcatat 240

gcagaacttg gcacctgctt tgtctgatct gaatgttctt gtngagacct atcntgctga 300

catccctgtt gnggngtana a 321

<210> 2973
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2973

tacaaggagg ccaaggcgct tggacgtgga taccgttccg gtcctgcgtt ggccctgtta 60

aatacctgtt gctctccang cctgncaang gagttgagaa atccttnnct ctcctctctc 120

tccttcccaa ggttcttgct gtctacaagg aagttattgc tgaccttaag gcagtggtgc 180

ttcatggatt cannttnatg agtctacnct gtnttggact tgagtctcac aagttg 236

<210> 2974
<211> 231
<212> nucleic acid
<213> Glycine max

<400> 2974

actcnanncn cncntncgtn agcncggnnt tcggctcnag nttggntcnt tcnctcagac 60

tgtanaacng ngnagggtac gccgtnaatt caaggctaac aanatctgcn gnggangagt 120

atntaaagtc aattanggag gaaattcgca aagttgttga gcttcaagaa gagcttgata 180

ttgatgttct tgttcatgga gaaccagcga nanatgntat ggttnagtcc c 231

<210> 2975
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2975

tnntngcacg cgtacgtaag ctcggaattc ggctcgagat gttgtaatat ttattctgct 60

gttactcatg gcttcttttc tttcctctca ggctgctgca ttgaagggtt cagatcatcg 120

ccgtgcaaca aatgtcagtg ccagactgga ttctcaacaa aagaagctca accttccaat 180

cctgnccaac caccactatt ggatccttcc ctcagactgt agaactgagg agggtacgcc 240

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ggaattcaag gctaacaaga tctccgagga agagtatgta aagtcaatta aggaggnnat   300

tcgcaaagtt gtt                                                      313


<210>      2976
<211>      184
<212>      nucleic acid
<213>      Glycine max

<400>      2976

atncagcgta cgtaagtcgg aattcggctc gagcagagtt taccaagcgc ccaatgaagg    60

gaatgcttac cggtcctgtt ancattcttc aactggtcct ttgttagaaa tgaccaacct   120

agatctgaga nccantacca gattgctttn ggctatcaaa gacgaantng agggnncttg   180

aaaa                                                                184


<210>      2977
<211>      314
<212>      nucleic acid
<213>      Glycine max

<400>      2977

nngtngcang cacgcgtacg taagctcgga attcggctcg agggtgaacc ctgactgtgg    60

gctcaagacc cgtaagtaca ctgaggtgaa gccagccctc acaaacatgg ttgccgcagc   120

aaaactcatc cgcaacgaac ttgccaagtg aatggtataa ganagtagaa tcttccaagt   180

catttggttc tgctttatat tataatacac caaagaaaaa ttttctctat attgggttgt   240

ttcaataact gtgtgtggaa tatttaggtg tcttagcatg ctctgtgagc aattgattct   300

tcctcaaccc ctcc                                                     314


<210>      2978
<211>      153
<212>      nucleic acid
<213>      Glycine max

<400>      2978

ncgcatgcac gcgtacgtaa gctcggaatt cggctcgagg tgaccaacga ggctgttcag    60

aaggctgctg ctgcattgaa gggttcagat catcgccgtg caacaaatgt cagtgccaga   120

ctggatttct caacaaaaga agctcaacct tcc                                153
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<210> 2979
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2979

gtcgctgcnc gcgtaagtcg gctcgngntt cggntcgngg ttattgctga ccttnaggca 60

gctggtgctt catggattca gtttgangag cctnnncttn tnttggaccc ngnngnanaa 120

ngnnnganga nnncgcngag gaanatggga attntgcgcg tacttngnnn ngnntgaang 180

annntnatna naccctctnt nntggaatac cnnatngngn aacccngaac cctnncatct 240

ctggaatggc gnnatgcgta tggattgatn agtcngtgga 280

<210> 2980
<211> 102
<212> nucleic acid
<213> Glycine max

<400> 2980

cccccagtgg anaatacctc nttgctggag tggttgatgg aaggaacatc tgggccaatg 60

accttgctgc ttctctccac tacattgcag ggtcttgagg gc 102

<210> 2981
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2981

gtcgangtgc acgcgtacgt aagctcggaa ttcggctcga gccacagtca gggttcaaga 60

cccgtaagta cactgaggtg aagccagccc tcacaaacat ggttgccgca gcaaaactca 120

tccgcaacga acttgccaag tgaatggtat aagaaagtag aatcttccaa gtcatttggt 180

tctgctttat attataatac accaaagaaa aattttcccc atattgggtg nttcnataac 240

tgngngtgga atatttangt gncttagcat gctctgtgag caattgat 288

<210> 2982
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2982

agctcggaat tcggctcgag cgtaagtaca ctgaggtgaa gccagccctc acaaacatgg 60

ttgccgcagc aaaactcatc cgcaacgaac ttgccaagtg aatggtataa gaaagtagaa 120

tcttccaagt catttggttc tgctttatat tataatacac aaagaaaaat tttctctata 180

ttgggttgtt tcaataactg tgtgtggaat atttaggtgt cttagcatgc tctgtgagca 240

attgattctt cctcaacccc 260

<210> 2983
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2983

gtcgnngcac gcgtacgtaa gctcggaatt cngctcgagc tctgcactct ctccttctca 60

tcctcttctc ttcgcttctc tgttcgtgcc acttcttctc cgagcaatgg gcatctcata 120

ttgttggtta tccacgcatg ggacccaaga gagaacttaa gtttgctttg gaatcttttt 180

gggatggaaa gagtagtgct gatgatctgc agaaggttgc tgctgacctt aggncagcca 240

tctggaagca gatggctgat gctggaataa agtatattcc tagcaacact ttctcatact 300

atgatcaagt actggacaca acn 323

<210> 2984
<211> 335
<212> nucleic acid
<213> Glycine max

<400> 2984

ngtcgcangc acgcntacgt nagctcggaa ttcggctcgn nctcgctctg cactctctct 60

ttctcatcct attctcttcg cttctctgtt cgtgccactt cttctncgag caatggcatc 120

tcatattgtt ggttatccac gcatgggacc caagagagaa cttaagtttg ctttggaatc 180

tttttgggat ggaaagagta gtgctgagga gctgcagaag gttgctgcag accttaggtc 240

agccatctgg aagcagatgg ctgatgctgg aataaagnat attcctagca acaccttctc 300

actttacgat caagtatgga cacaacagcc atgct 335

<210> 2985

<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2985

ngtngcatgc acgcgtacgt aagctcggaa ttcggctcga ggtttacgat ctcactctgc 60

actctctcct tctcatcctc ttctcttcgc ttctctgttc gtgccacttc ttctcgagca 120

atggcatctc atattgttgg ttatccacgc atgggaccca anagagaact taagtttgct 180

ttggaatctt tttgggatgg aaagagtagt gctgatgatc tgcagaaggt tgctgctgac 240

cttaggtcag ccatctggaa gcagatggct gatgctggaa taaagtatat tcctagc 297

<210> 2986
<211> 327
<212> nucleic acid
<213> Glycine max

<400> 2986

nnttancaag cgtangtaag ctcggaattc ngctcgagct cactctgcac tctctcctct 60

ctcatcctcg tgtctncgcn ncnntcggnc ngcnattccg tcccgagcna tggcatctca 120

tattgtnggt tatccacgca tggccnccca ngagaganct taagtnngct ttggaatctt 180

tttgggatgg aaagagtagt gctgatgatc tgcngaaggt tgctgctgac cttaggtcag 240

ccatctggaa gcagatggct gatgctggaa taaagtatat tcctagcaac actttctcat 300

actatgatca agtactggac acaacag 327

<210> 2987
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 2987

cnatcgcang cangcgtacg taagctcgga attcggctcg aggtgaagtg antagtataa 60

atntacaaan tcncctncan tcattgtgtg gcgccgttna cattctcgnt ctgcactctc 120

tctttctcat cctnntctct tcgcntctct gtncgtgcca cntcttctcg agcaatggca 180

tctcatattg ttggttatcn acgcatggna cccaagagag aacgtaagtt ngcttnggan 240

tctntttggg atggaaagag nagtgctgag gagctgcaga aggttgctgc agaccttagg 300

tgagccatct tgaan 315

<210> 2988
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 2988

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggattattaa tcgtatcagt 60

gaaagaagta agaagagaga gaagtgaagt tagtagtata aatgtacaaa ctctcctcta 120

ttcagtgtgt ggcgccgttt acgatctcac tctgcactct ctccttctca tcctcttctc 180

ttcgcttctc tgttcgtgcc acttcttctc gagcaatggc atctcatatt gttggttatc 240

cacgcatggg acccaagaga gaacttaagt ttgctttgga atctttttgg gatggaaaga 300

gtagtg 306

<210> 2989
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2989

gtcgcangca cgcntacgtn agctcggaat tcggctcgag ctctgcactc tctctttcnc 60

atcctattct cttcgcttct ctgtnccgtg ccacttcttc tcgagcaatg gcatctcata 120

ttgttggtta tccacgcatg ggacccaana gagaacttaa gtttgctttg gaatctttgg 180

gatggaaaga gtagtgctga ggagctgcag aaggttgctg cagaccttag gtcagccatc 240

tggaagcaga tggctgatgc tggn 264

<210> 2990
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 2990

tacgcgtacg taagctcgga attcggctcg agcttctttc cctaattgac aagatccttc 60

ctgtctacag ggaggntgtt gctgaattga aggcagctgg tgctacttgg atccagtttg 120

atgaacctac ccttgtgaag gatctcaana cccaccagtt acaagcattt acacatgnct 180

atgcagagct agagtcaagt ttatctggtt ttaatgttct gattgagana tactttgctg 240

atgtccctgc tgaagcatac aaaacactca cctctttgaa ggctgttact gcatatgggt 300

ttgatattgt tcgtgg 316

<210> 2991
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 2991

caanatacat gcacgcntac gtnagctcgg aattcggctc gagggcagct ggtgctactt 60

ggatccagtt tgatgaacct acccttgtga aggatctcaa cacccaccag ttacaagcat 120

ttacacatgc ctatgcagag ctagagtcaa gtttatctgg ttttaatgtt ctgattgaga 180

catactttgc tgatgtccct gctgaagcat acaaaacact cacctctttg aaggctgtta 240

ctgcatatgg gtttgatatt gttcgtggaa caaagaccct ggatttgttc naggcaggtt 300

ttcccncggg gaaatntttt t 321

<210> 2992
<211> 331
<212> nucleic acid
<213> Glycine max

<400> 2992

ttgcangcac gcgtagtaag ctcggaattc ggctcgagnn tctttcccta attgacaaga 60

tccttcctgg tctacaggga ggtngttgct gaattgaagg cagctggtgc tatttggatc 120

tagtntgatg aacctaccnt tgtgaaggat ctcaacaccc accagttaca agcatttaca 180

catgcctatg caganctaga gtcaagttta tctggtttta atgttctgat tgagacatac 240

tttgctgatg tccctgctga agcatacaaa acactcacct ctttgaaggc tgttactgca 300

tatgggtttg atattgttcg tggaacaaag a 331

<210> 2993
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2993

gatcgacatg cttgggctgg agaatacccc ggcgtgaagc gcatcaccat caagccccaa 60

actgacagat gggtctccct gagaccaaca cggtatcatg tcttggctga gggtcgattg 120

atgaacttgg atgcgcaatg gaaaccccag tttggagtct gttcctcaac naccagtcat 180

tgtcacttag tgtgaaggga natacgnagt acgagagagt tagttgccca gactgagaga 240

gtgtgcntta ctggcaattg gactagtgcc actacagccg gtgt 284

<210> 2994
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2994

cangcacgcg tacgtaagct cggnattcgg ctcgaggggc cccgnacggc ggccccgacc 60

tnatcgtcga cgacggaggc gacgccaccc tcctcatcca cgagggcgtc aaggccgagg 120

agctctatga gaagaccggg gaactccccg accctaactc cactnanaat ncnaannntc 180

cagatcgtgc ttaccnncan cagnganngg ttgaanaccg atcncaccan gtaccgnaag 240

atgaaggncc gtctcgttgg ggtttctgag aaaccaacac tggtgttaag agnctat 297

<210> 2995
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 2995

ngtcgcatgc acgcntacgt aagctcggaa ttcggctcga gtgagaagac cggggaactc 60

cccgacccta actccactga caacgccgag ttccagatcg tgcttaccat catcagagat 120

gggttgaaga ccgatcccac caggtaccgc aagatgaagg agcgtctcgt tggggtttct 180

gaggaaaanc aaccactggt gttaaagang gctaaatccg gatgncaggn gaatggggat 240

tctantcntt ccctgnngat aaatgtcaat gagannctnt tcncnaaggn ccangtttgn 300

aaantttnna cgggnccg 318

<210> 2996
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2996

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga gcccgacccc anctccaccg 60

ncaacgccga gtttcanatc gtgcttacna tcatcagaga tgggttgang accgatccca 120

ccaggtaccg caagatgncg gngcgtctcg ttggggttnc tgaggnnacc accactggng 180

tnangaggct ctatnagatg naggcgaatg ggnctcttct cttccctgcn attnntgtna 240

atgacnngtc nccangagca agtttgacaa cntgtatngg tgccgtca 288

<210> 2997
<211> 334
<212> nucleic acid
<213> Glycine max

<400> 2997

cgtcgcngca cgcgtacgtn agctcggaat tcggctcgag tcaacatcaa gcctcaaaca 60

gacagatggg ttttccccga taccaagagg gggatcatcg tgttggcaga gggtcgtttg 120

atgaacttgg ggtgtgccac gggacacccc agctttgtga tgtcgtgctc cttcaccaac 180

caggtcattg ctcagcttga attgtggaaa gagaagggtt ctgggaagta tgagaagaag 240

gataatnnat ncccaagcac ctnacgagaa agnngcntna nanctaccat tgccagcatt 300

gagcnntgcg naccaagcgt tccaaagacc aagc 334

<210> 2998
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2998

gcacgcgtac gtaagctcgg aattcggctc gagcggagtt ccagatcgtg ctgagcatca 60

tcagggatgg cttgaagacc gatcccaaga ggtaccacaa gatgaaggac agaatcgtcg 120

gtgtctccga agaaaccacc accggtgtca agaggctcta ccagatgcag gccaatggct 180

ccctcttgtt ccctgccatc aacgtcaatg actcggtcac caagagcaag tntgataact 240

tgtatggatg ccgtcactcg cttcccgatg gactgat 277

<210> 2999
<211> 293
<212> nucleic acid

<213> Glycine max

<400> 2999

tcgcangcac gcgtacgtaa gctcgnnaat tcggctcgag ctcagccctt caagggggcc 60

cgcatcaccg gctcccttca catgaccatc cagaccgctg tcctcatcga gacccncanc 120

gttctnggcg ncgtggttcn ntngtgctcc tnnaanntnt tcnccattna gnnncncanc 180

gcngtcgcna tcgcncgtnt cagcgtccgc tgtctacgcc tgtaatggtg ataccctcca 240

tgagtactnt tggtgcacng atgngccctc gatgggnccc cggcggcngn ccc 293

<210> 3000
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 3000

gcgaangcat gcacgcgtac gtaagctcgg aattcggctc gaggccagct tggagctagg 60

ctcaccaagc tttccaaaga ccaagctgat tacatcagtg tgcctgttga gggtccatac 120

aagcctcctc actacaggta ctgatccatc ctattnnggg agaataaacc taaactattn 180

tatcaattcc cgaggcntca ttgttacact ttccttttg gatttttcc attacaattt 240

acntttgtgg tagcatcgga gcttcttttt tctttttag tannatca 288

<210> 3001
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 3001

gcangcacgc gtacgtaagc tcggaattcg gctcgaggtc tccgaggccg acatcttcgt 60

caccaccaca gggaacaagg acattatcat gcttgaccac atgaagaaga tgaagaacaa 120

tgccatcgtg tgcaacattg gccacttcga caacgaaatc gacatgctgg ggcttgagac 180

ctgccctggt gtgaagcgca tcaacatcaa gcctcanacn gacagatggg ttttccccga 240

taccaagagg gggatcatcg tgttggcaga gggtcgtttg atgaan 286

<210> 3002
<211> 294
<212> nucleic acid

<213> Glycine max

<400> 3002

acgncgcang gacncgtaag ntcaggtctc nagctcgngg cnaggatccc aagaggtacc 60

acaacgnnga aggacagaat cgtcggtgtc tccgaagana ccaccaccgg tgtcaagagg 120

ctctaccaga tgcnggcnaa tggctccctc ttgttccctg ccatcaacgt caatgactcg 180

gtcaccaana gnangtttga taacttgtnt ggatnccgtc actcgcttcc cgatggactg 240

atgagagcca ctgatntgat gattgccgga aaggnagctg ttgtgtgtgg ctac 294

<210> 3003
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 3003

gtcacacgag gtcccgatag antgatgaan cgccactgat gtgatgatng ccggaaaggt 60

agcagttgng gnnggcaccg agangnggca aggntagnnc ancgcnaana ngnaaaccng 120

ggcncgtgtc atngtcancg agatngatcc catntntncc cttnaggcnc taatgncggg 180

tcttcaggtt ctcaccctgg aagatgtngt ctccgaggcc gacatcntcg tcaccancac 240

agggaacaag gacatt 256

<210> 3004
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 3004

gtngcannca cgcgtacgta agctcggaat tcggctcgaa ngggccccgg cggcggcccc 60

gacctcatcg tcgacgacgg aggcgacgcc ancctcctca tccacgaggg cgtcaaggcc 120

gaggagctct atgagnagac cggggaantc cncgnnccta antccactna caacgccgag 180

ttccagattg tgcttaccat catcagngat gggtnnaana angatcccan naggtaccgn 240

aanntgaagg ancgtctcgt tggggtttct gangaaccca cgatggtgtt aagatgtana 300

nc 302

<210> 3005

<211> 313
<212> nucleic acid
<213> Glycine max

<400> 3005

aaancntcaa tcgcangcac gcgtacgtna gctcggaatt cggctcgagc agagatgggt 60

tgaagaccga tcccaccagg taccgcaaga tgaaggagcg tctcgttggg gttnctgagg 120

aaaccaccac tggtgttaag aggctatatc agatgcagcg attgggatcc tattnttccn 180

ngnaattaat gtcaatgact ctgttaccaa gancaatttg acaacttgta ccgggtgccg 240

tcantctctc cctgatggnc tantnaggcc tactnntgtg ntgttgnctg gaaagttgnn 300

ngtgttgcnt gat 313

<210> 3006
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 3006

agtcgcatgc acncgtacgt aagctcggaa ttcggctcga gggnccgcat caacggctcc 60

ctccacatga cnatccagag gaggcgttnt cattgagann ntcanngncc ttggngncga 120

ggtncgntgg tgctcntgca anatcttctc cacccaggan cacgcnnacg cngctattgc 180

ccgcganagt gcngccgtct tcgnctggaa gggtgagacc ctccaggagt actggtggtg 240

caccgagcgc gcnctcgant ggggccccgg tggtggaccg anctcatcgt cgacgaggtg 300

gtgang 306

<210> 3007
<211> 70
<212> nucleic acid
<213> Glycine max

<400> 3007

attnttntgc tttgaccaca tnnagaanat gaagnannan tgccttggtg ttgcaacatt 60

tggccacttt 70

<210> 3008
<211> 536
<212> nucleic acid

<213>	Glycine max

<400>	3008

gggggngnnn nnnnttcann ggttncctgc cgtaacggtc cgaaatcccg ggtcgnccca 60

cgcgtccgcc cacgcgtccg ncggntgcga naagannaca gaagggggcc caggctgatt 120

acatcantgt gcctgttgag ggtccatnca agcctgctca ntacnngtac taagtaattg 180

agattatcaa cggaacagtg aggganagac ntantcggtt ttatgaatcg ggntgattgt 240

ttaagttntc cttttttttg aggttttgtt gttanacttt tcagatttga gggtagcctn 300

agtttanctt tngggcngcn naagnagnag tcaggtnttn aaaaaaggng gcngngntgg 360

nggatcnaan nttacgtacg cttgcntnca acgtcatnnc tcttcgaaag tggcaccnat 420

tttcaattca ggggccggnc gttttaannn cnncnttnnc ggggaaaacc ttggggntan 480

ccanggttac ccccttgncn tnannncccn ttttccccna nttgggttaa aaaaaa 536

<210>	3009
<211>	330
<212>	nucleic acid
<213>	Glycine max

<400>	3009

gtccnatncg gctgngngna gacgnggggt tgggtnacnt ggnnntcntc ntggttgncc 60

ncttgaggnn cttgatganc aatgccattg tttgctncat tggtcacttt gggcctgaga 120

tngacntgct tggnctggag nactattccg gtgtgntnng catcaccatc atgncccctt 180

tctgacagat gggtcttccc tgataccngc nccggtatcn ttgtcttggc tgagggtcnn 240

ttgntnatct tgggatncnc cattngncac ttccnttttg tgatgtcctg ctccttcngc 300

antnggntcn ntgctcngnt tgngttgtgg 330

<210>	3010
<211>	473
<212>	nucleic acid
<213>	Glycine max

<400>	3010

gtttgattcc gagccannca atgcatcgna nncangcgta cntaaactcg gaattcggcn 60

cnagcaatga ctctgtcacc aagagcaant ttgacanctt gtatgggtgc cgtcactctc 120

tccctgatgg nctcatgagg gctaccgatg ttatgattgc tggaaaggtg gctgttgtgg 180

ctggatatgg tgatgttggc aagggttgtg ctgctgcaat gaagcaggct ggtgctcgtg 240

tcatcgtgac cganattgat cccatctgtg cccttcaggc tctcatggaa ggccttcagg 300

ttctgacctt ggaggatgtt gtttctgagg ctgatatctt tgtcaccacc accggtaaca 360

aggacatcat catggttgac cacatgagga aaatgaacaa caatgccatt gtttgcaaca 420

ttggtcacnt tgacaatgag atcgacatgc ttgggctgga gaactaaccc ggg 473

<210> 3011
<211> 500
<212> nucleic acid
<213> Glycine max

<400> 3011

gaggnntgnt ttgnancnan anactttcgc ctgccgtacc ggtccggaat tcccgggtcg 60

acccacgcgt ccgcggacgc gtgggcggac gcgtgggctg cgagagacga cagaaggggg 120

gactctactc ttccctgcta ttaatgtcaa tgactctgtt accaagagca agtttgacaa 180

cttgtacggg tgctgtcact ctctccctga tggtctgatg agggctactg atgtgatgat 240

tgctggaaag gtggctgttg tggctggata tggngatgtt ggcaagggtt gtgctgctgc 300

attgaagcag gctggtgctc gtgtcatcgt gactgagatt gaccccattt gtgcccttca 360

ggctctcatg gaaggccttc aggttctgac cttggaggat gttgtttctg aggctgatat 420

ctttgtcacc accacgggta acaaggacat catcatggnt gaccacatga agaaaatgaa 480

gaacaatgcc attgtttgca 500

<210> 3012
<211> 383
<212> nucleic acid
<213> Glycine max

<400> 3012

ccattgtttg caacattggt cactttgaca atgagatcga catgcttggg ctggagaact 60

accccggcgt gaagcgcatc accatcaagc cccaaactga cagatgggtc ttccctgaga 120

ccaacaccgg tatcattgtc ttggctgagg gtcgattgat gaacttggga tgcgccactg 180

gacaccccag ttttgtgatg tcctgctcct tcaccaacca ggtcattgct cagcttgagt 240

tgtggaagga gaagagtacc ggcaagtacg agaagaaggt ttacgttttg cccaagcacc 300

ttgatgagaa ggtggctgca cttcacctgg gcaaacttgg agctaagctg acccagctta 360

gcaagtccca ggctgattac atc 383

<210> 3013
<211> 528
<212> nucleic acid
<213> Glycine max

<400> 3013

gnnnggaggt ttganngggg gngggnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnagagagan agagagagat ctatctatct 120

atcaagatgg ngttgttggt tgagaaaaca agcagtggaa gggagtacaa ggtgaaggac 180

atgacgcaag ccgatttcgg aagattggaa atcgagctgg cggaggttga aatgcccggc 240

ctcatgtcct cccgcaccga gttcggcccc tctcaaccct tcaagggcgc taggatcacc 300

ggctccctcc acatgaccat ccaaaccgcc gtcctcatcg agaccctcac cgccctcggc 360

gccgaggtcc gctggtgctc ctgcaacatc ttctccaccc aggaccatgc cgccgccgcc 420

atngcccgcg acagcgcctt cgtcttcgcc tggaaggggt gagaccctnc aggaatactg 480

gtggtgcacc gagcgcgccc tcgactgggg ccccggcggn gggcccca 528

<210> 3014
<211> 520
<212> nucleic acid
<213> Glycine max

<400> 3014

agngtttttg tanntggggg gggggggggn aagnganata tnttagctat agatntnaca 60

tgtacanngt acgtaagctc ggaattcggc tcgagggccg acttcggccg cctcgagatc 120

gagctggccc gaggttgaga tgccgggcct catggcctgg cggaccgagt tcggcccatc 180

tcacccttca agggggcccg catcaccggc tcccttcaca tgaccatnca gaccgctgtc 240

ctcatcgaga ccctcaccgn tctcggcgcc gaggttcgct ggtgctcctg caacatcttc 300

tcactcagga ccacgccgcc gncgccatcg cccgtgacag cgccgncgtc ttcgcctgga 360

agggtgagac cctccaggag tactggtggt gcaccgagcg cgcccttgac tggggccccg 420

gcggcggccc cgacctnatt gtcgacgacn gaagcnacgc cacctctnat cacgaaggcc 480

tnaangncca gggctctatn annaagaccg gggaactccc 520

<210> 3015
<211> 344
<212> nucleic acid
<213> Glycine max

<400> 3015

gttatttctc agcgcgtaaa gcatggcttt gttggtggag aaaaccacga gtggtcgcga 60

gtacaaggtc aaggaccttt cccaggccga cttcggccgc ctcgagatcg agctggccga 120

ggttgagatg cccggcctca tggcctgtcg naccgagttc ggcccntccc agccttcaag 180

ggggcccgca tcaccggctc cctccacatg accatccagc ggcgccgttc tcattgagac 240

cctcaccgcc cttggcgccg aggtccgctg gtgctcctgc aacatcttct ccanccagga 300

ccacgccgcc gccgtanttc ncgcgacagt gcngccgtct tcgc 344

<210> 3016
<211> 528
<212> nucleic acid
<213> Glycine max

<400> 3016

ggnnnaagtt tttgnngggg ggggnannan gtnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnntcgagat cganctggcc 120

cgaggtngag atggcgatcc tcatggcgtg gcggaccgag ttcggcccat ctcanccctt 180

gaagggggcc cgcatnaccg gctccnttca catgaccatt canaccgntg tcctcatcga 240

naccctnacc gctctcggcg ccgaggttcg ctggtgctcc tgcaacatct tctccactca 300

ggaccacgcc gncgncgcca tcgcccgtga cagcgccgnc gtcttcgcct ggaagggtga 360

gaccctncan gagtactggt ggtncaccga gcgcgccctt gactggggcc cccgcgnggc 420

cccgaccttta tngtcnaccg accgaaggca accccacctt cttatcaacn aggccgtnaa 480

ggccaaggag ctctatnaag aagaccgggg aactccccna ccctaact 528

<210> 3017
<211> 347
<212> nucleic acid

<213> Glycine max

<400> 3017

ccggctccct tcacatgacc atccagaccg ctgtcctcat cgagaccctn caccgctctc 60

ggcgccgagg ttcgctggtg ctcctgcaac atcttctcca ctcaggacca nnnnnnnnnn 120

nnnnnnnnnc gtgacagcgc cgccgtcttc gcctggaagg gtgagaccct ccaggagtac 180

tggtggtgca ccgagcgcgc cctcgactgg ggccccggcg gcggccccga cctncatcgt 240

cgacgacgga ggcgacgcca ccctcctcat ccacganggc gtcaaggccg aggagctcta 300

tgagaagacc ggggaattcc ccgaccctaa ttccantgac aacgcgg 347

<210> 3018
<211> 332
<212> nucleic acid
<213> Glycine max

<400> 3018

gtcgcangca cgcntacgtn agctcggaat tcggctcgag caggttctga ccttggagga 60

tgttgtttct gaggctgata tctttgtcac caccaccggt aacaaggaca tcatcatggt 120

tgaccacatg aggaaaatga agaacaatgc cattgtttgc aacattggtc actttgacaa 180

tgagatcgac atgcttgggc tggagaacta ccccggcgtg aagcgcatca ccatcaagcc 240

ccaaactgac agatgggtct tccctgagac caacaccggt atcattgtct tggctgaggg 300

tcgattgatg aacttgggat gcgccactgg ac 332

<210> 3019
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 3019

ngtngangca cgcgtacgta agctcggaat tcggctcgag gtcaaggacc tntcccaggc 60

cgacttcggc cgcctcgaga tcgagctggc cgaggttgag atgcccggcc tcatggcctg 120

tcggacngag ttcggcccct cccagccctt caaggggggcc cgcatcaccg gctccctcca 180

catgaccatc cagngcgccg ttctcattga gaccctcacc gcccttggcg ccgaggtccg 240

ctggtgctcc tgcaacatct tctccaccca ggaccacgcc gccgccgcta ttgcccgcga 300

cagtgcc 307

<210> 3020
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3020

cgctgcntac gtacgtaagc tcggaattcg gctcgagccg agttcggccc ctcccagccc 60

ttcaaggggg cccgcatcac cggctccctc cacatgacca tccagaccgc cgttctcatt 120

gagaccctca ccgcccttgg cgccgaggtc cgctggtgct cctgcaacat cttctccacc 180

caggaccacg ccgccgccgc tattgcccgc gacagtgccg ccgtcttcgc ctggaagggt 240

gagaccctcc aggagtactg gtggtgcacc gagcgcgccc tcgactgggg ccccggtg 298

<210> 3021
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 3021

ctttctctag tcctgttatt tctcagcgcg taaagcatgg ctttgttggt ggagaaaacc 60

acgagtggtc gcgantacaa ggtcaaggac tttcccaggc cgacttcggc cgcctcgaga 120

tcgagctggc cgaggttgan atgcccggcc tcatggcctg tcggaccgag ttcggcccct 180

cccagccctt caaggggcn cgcatcaccg gntccctcca catnaccatc cagaccgccg 240

ttctcattga gaccctcacc gcccttggcg ccgaggtncg ctggtgctcc tgcaacatct 300

tctccaccca ggaccacgcc gngccgctat tgtcgcgaa 339

<210> 3022
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 3022

caccactggt gttaagaggc tatatcagat gcaggcgaat gggactctac tcttccctgc 60

tattaatgtc aatgactctg ttaccaagag caagtttgac aacttgtacg ggtgccgtca 120

ctctctccct gatggtctga tgagggctac tgatgtgatg attgctggaa aggtggctgt 180

tgtggctgga tatggtgatg ttggcaaggg ttgtgctgct gcattgaagc aggctggtgc 240

tcgtgtcatc gtgactgaga ttgaccccat ttgtg 275

<210> 3023
<211> 320
<212> nucleic acid
<213> Glycine max

<400> 3023

cnntncacgc gtacgtnagc tcggaattcg gctcgaggag gaaaccacca ctggtgttaa 60

gaggctatat cagatgcagg cgaatgggac tctactcttc cctgctatta atgtcaatga 120

ctctgttacc aagancaagt ttgacaactt gtacgggtgc cgtcactctc tccctgatgg 180

tctgatgagg gctactgatg tgatgattgc tggaaaggtg gctgttgtgg ctggatatgg 240

tgatgttggc aagggttgtg ctgctgcatt gaagcaggct ggtgctcgtg tcatcgtgac 300

tgagattgac cccattgtgc 320

<210> 3024
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 3024

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tggtcgcgag tacaaggtca aggacctttc ccaggccgac ttcggccgcc tcgagatcga 120

gctggccgag gttgagatgc ccggcctcat ggcctgtcgg accgagttcg gcccctccca 180

gcccttcaag gggcccgca tcaccggctc cctccacatg accatccaga ncgccgttct 240

cattgagacc ctcaccgccc ttggcgccga ggtccgctgg tgctcctgca acatcttctc 300

caccca 306

<210> 3025
<211> 518
<212> nucleic acid
<213> Glycine max

<400> 3025

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gcgtacgtaa gctcggaatt cggctcgagg agagatctat ctatctatca agatggcgtt 120

gttggttgag aaaacaagca gtggaaggga gtacaaggtg aaggacatga cgcaagccga 180

tttcggaaga ttggaaatcg agctggcgga ggttgaaatg cccggcctca tgtcctcccg 240

caccgagttc ggcccctctc aacccttcaa gggcgctagg atcaccggct ccctncacat 300

gaccatncaa accgncgtcc tcatcgagac cctnaccggc ctnggcgccg aggtcccgct 360

ggtgctnctg caacatcttc ttcanccaag accatgccgg cgcgcatcgc cgggacagcg 420

ccttcgtctt cgcctggaaa ggtgagaccc ttcaggaatc tggtggtgca ccgagcgcgc 480

ccttgactgg ggccccngcg gcggcccgat ctnattgt 518

<210> 3026
<211> 338
<212> nucleic acid
<213> Glycine max

<400> 3026

ctccaaggtc agaacctgaa ggccttccat gagagcctga tatctttgtc accaccaccg 60

gtaacaagga catcatcatg gttgaccaca tgaggaaaat gaagaacaat gccattgttt 120

gcaacattgg tcactttgac aatgagatcg acatgcttgg gctggagaac taccccggcg 180

tgaagcgcat caccatcaag ccccaaactg acagatgggt ctnccctgag accaacaccg 240

gtatcattgt cttggctgag ggtcgattga tgacttggga tgcgccatgg acaccccagt 300

tttgtgatgt cctgctcctt caccaacang tcattgtc 338

<210> 3027
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 3027

gtaccaatgt cggcatcatt gtcttggccg agggtcgttt gatgaacttg ggatgcgcca 60

caggacaccc tagttttgtg atgtcctgct ccttcaccaa ccaggtcatt gctcagcttg 120

agttgtggaa ggagaagagt accggcaagt acgagaagaa agtttacgtt ttgcccaagc 180

accttgatga caaggtggct gcacttcacc ttggcaaact tggagctaag ctcaccaagc 240

ttagcccggc ccaggctgat tacatcagtg tgcctgttga gggtcc 286

<210> 3028
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 3028

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ncgatgttat gattgctgga 60

aaggtggctg ttgtggctgg atatggtgat gttggcaagg gttgtgctgc tgcaatgaag 120

caggctggcg ctcgtgtcat cgtgaccgag antcnatccc atctgtgccc ttcaggctct 180

catgnaaggc cttcaggttc tgaccttgga ggatgttgtt tctgaggctg atatctttgt 240

caccaccacc ggtaacaagg acatcatcat ggttgaccac atgaggaaaa tgaagaacaa 300

tgccattgtt tgcaacattg gtcactttga caatgagatc 340

<210> 3029
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 3029

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tgaggaaacc accactggag 60

ttaagaggct ctatcagatg caggcgaatg ggactcttct cttccctgct attaatgtca 120

atgactctgt caccaagagc aagtttgaca acttgtatgg gtgccgtcac tctctccctg 180

atggtctcat gagggctacc gatgttatga ttgctggaaa ggtggctgtt gtggctggat 240

atggtgatgt tggcaagggt tgtgctgctg caatgaagca ggctggtgct cgtgtcatcg 300

tgaccgagat tg 312

<210> 3030
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 3030

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gaaggtcaag gacctttccc 60

aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgccc ggcctcatgg 120

cctgtcggac cgagttcggc ccctcccagc ccttcaaggg ggcccgcatc accggctccc 180

tccacatgac catccagacc gccgttctca ttgagaccct caccgccctt ggcgccgagg 240

tccgctggtg ctcctgcaac atcttctcca cccaggacca 280

<210> 3031
<211> 324
<212> nucleic acid
<213> Glycine max

<400> 3031

ngangcacgc gtacgtaagt cggaattcgg ctcgagtgtt atttctcagc gcgtaaagca 60

tgggctttgt tggtggagaa aaccacgagt ggtcgcgagt acaaggtcaa ggacctttcc 120

caggccgact tcggccgcct cgagatcgag ctggccgagg ttgagatgcc cggcctcatg 180

gcctgtcgga ccgagttcgg cncctcccag cccttcaagg gggcccgcat caccggctcc 240

ctccacatga ccatccagac cgccgttctc attgagaccc tcaccgccct tggcgccgag 300

ntccgctggt gctcctgcaa catc 324

<210> 3032
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3032

acgtcgcang cacgcgtacg tnagctcgga attcggctcg aggcccctcc cagcccttca 60

agggggcccg catcaccggc tccctccaca tgaccatcca ganccgccgt tctcattgag 120

accctcaccg cccttggcgc cgaggtccgc tggtgctcct gcaacatctt ctccacccag 180

gaccacgccg ccgccgctat tgcccgcgac agtgccgccg tcttcgcctg gaagggtgag 240

accctccagg agtactggtg gtgcaccgag cgcgccctcg actggggccc cggtggtgga 300

ccc 303

<210> 3033
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 3033

gtnnatncac gcgtacgtaa gctcggaatt cggctcgagg ctggtgctcc tgcaacatct 60

tctccaccca ggaccacgcc gccgccgcta ttgcccgcga cagtgccgcc gtcttcgcct 120

ggaagggtga gaccctccag gagtactggt ggtgcaccga gcgcgccctc gactggggcc 180

ccggtggtgg acccgacctc atcgtcgacg acggtggtga cgctaccctt ctcatccacg 240

aaggcgtcaa ggccgaggag ctctatgaga agaccggcga actccccgac cccaactcca 300

ccgacaac 308

<210> 3034
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3034

gtcgcangca cgcgtacgta agctcggaat tcggctcgag caccggtaac aaggacatca 60

tcatggttga ccacatgagg aaaatgaaga acaatgccat tgtttgcaac attggtcact 120

ttgacaatga gatcgacatg cttgggctgg agaactaccc cggcgtgaag cgcatcacca 180

tcaagcccca aactgacaga tgggtcttcc ctgagaccaa caccggtatc attgtcttgg 240

ctgagggtcg attgatgaac ttgggatgcg ccactggaca ccccagtttt gtga 294

<210> 3035
<211> 332
<212> nucleic acid
<213> Glycine max

<400> 3035

ntacagtcgc angcacgcgt acgtnagctc ggaattcggc tcgagctcta tcagatgcag 60

gcgaatggga ctcttctctt ccctgctant aatgtcaatg actctgtcac caagancaag 120

tttgacaact tgtatgggtg ccgtcactct ctccctgatg gtctcatgag ggctaccgat 180

gttatgattg ctggaaaggt ggctgttgtg gctggatatg gtgatgttgg caagggttgt 240

gctgctgcaa tgaagcaggc tggtgctcgt gtcatcgtga ccgagattga tcccatctgt 300

gcccttcagg ctctcatgga agccttcagg tt 332

<210> 3036
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 3036

tcncatcgca tgcacgcgta cgtaagctcg gaattcggct cgagcgagta caaggtcaag 60

gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgcnc 120

ggcctcatgg nctgtcggac ngagttcggc ncctcccagc ccttcaaggg ggcccgcatc 180

accggctccc tccacatgac catccaganc gccgttctca ttgagaccct caccgccctt 240

ggcgccgagg tccgctggtg ctcctgcaac atcttctcca cccagga 287

<210> 3037
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 3037

gcacgcgtac gtaagctcgg aattcggctc gaggttccag atcgtgctta ccatcatcag 60

agatgggttg aagaccgatc ccaccaggta ccgcaagatg aaggagcgtc tcgttggggt 120

ttctgaggaa accaccactg gtgttaagag gctatatcag atgcaggcga atgggactct 180

actcttcctg ctattaatgt caatgactct gttaccaaga gcaagtttga caacttgtac 240

gggtgccgtc actctctccc tgatggtctg atgagggcta ctgatgtgat gattgctgga 300

aaggtggctg ttgtggctgg atatgg 326

<210> 3038
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 3038

cgcangcacg cgtacgtaag ctcggaattc ggctcgaggg aaaatgaaga acaatgccat 60

tgtttgcaac attggtcact ttgacaatga gatcgacatg cttgggctgg agaactaccc 120

cggcgtgaag cgcatcacca tcaagcccca aactgacaga tgggtcttcc ctgagaccaa 180

caccggtatc attgtcttgg ctgagggtcg attgatgaac ttgggatgcg ccactggaca 240

ccccagtttg tgatgtcctg ctccttcacc aaccaggtca ttgctcagct tgagttgtgg 300

aaggag 306

<210> 3039

<211> 259
<212> nucleic acid
<213> Glycine max

<400> 3039

ctcattgaga ccctcaccgc ccttggcgcc gaggtccgct ggtgctcctg caacatcttc 60

tccacccagg accacgccnc cgccgctatt gcccgcgaca gtgccgccgt cttcgcctgg 120

aagggtgaga ccctccagga gtactggtgg tgcaccgagc gcgccctcga ctggggcccc 180

ggtggtggac ccgacctcat cgtcgacgac ggtggtgacg ctacccttct catccacgaa 240

gcgtcaaggc cgaggagct 259

<210> 3040
<211> 306
<212> nucleic acid
<213> Glycine max

<400> 3040

nncgcatgca cgcntacgta aagctcggaa ttcggctcga ggtaaagcat ggctttgttg 60

gtggagaaaa ccacgagtgg tcgcgagtac aaggtcaagg acctttccca ggccgacttc 120

ggccgcctcg agatcgagct ggccgaggtt gagatgcccg gcctcatggc ctgtcggacc 180

gagttcggcc cctcccagcc cttcaagggg gcccgcatca ccggctccct ccacatgacc 240

atccagancg ccgttctcat tgagaccctc accgcccttg gcgccgaggt ccgctggtgt 300

cctgca 306

<210> 3041
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 3041

ttcangcncg cntacgtaag ctcggaattc ggctcgannc ttgggatgcg ccactggaca 60

ccccagtntt gtnatgtcct gctccttcac caaccaggtc attgctcagc ttgagttgtg 120

gaaggagaag agtaccggca agtacgagaa gaaggtttac gttttgccca agcaccttga 180

tgagaaggtg gctgcacttc acctgggcaa acttggngct aagctgaccc agcttngcaa 240

gtcccaggct gattacatca gtgtgcctgt tganggtcca tacaagcctg ctcactacag 300

gtactaagtg at 312

<210> 3042
<211> 330
<212> nucleic acid
<213> Glycine max

<400> 3042

cnaagtctcn ngcacgcgta cgtaantcgg aattcggctc gaggctggtg ctcctgcaac 60

atcttctcca cccaggacca cgccgccgcc gctattgccc gcggacagtt nccgccgnct 120

tcgcctggaa gggtgagacc ctccaggagt actggtggtg caccgagcgc gccctcgact 180

ggggccccgg tggtggaccc gacctcatcg tcgacgacgg tggtgacgct acccttctca 240

tccacgaagg cgtcaaggcc gaggagctct atgagaagac cggcgaactc cccgacccca 300

actccaccga caacgccgag tttcagatct 330

<210> 3043
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 3043

gtcgtatgca cgcgtangta agctcngaat tcggctcgag tttctgagga aaccaccact 60

ggagttaaga ggctctatca gatgcaggcg aatgggactc ttctcttccc tgctattaat 120

gtcaatgact ctgtcaccaa gagcaagttt gacaacttgt atgggtgccg tcactctctc 180

cctgatggtc tcatgagggc taccgatgtt atgattgctg gaaaggtggc tgttgtggct 240

ggatatggtg atgttggcaa ggttgtgctg ctgcaatgaa gcaggctggt gctcgtgtca 300

tcgtgancga gatc 314

<210> 3044
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 3044

naccanncnc gcgtacgtaa gctcggaatt cggctcgagt gggactcttc tcttccctgc 60

tattaatgtc aatgactctg tcaccaagag caagtttgac aacttgtatg ggtgccgtca 120

ctctctccct gatggtctca tgagggctac cgatgttatg attgctggaa aggtggctgt 180

tgtggctgga tatggtgatg ttggcaaggg ttgtgctgct gcaatgaagc aggctggtgc 240

tcgtgtcatc gtgaccgaga ttgatcccat ctgtgccctt caggctctca tggaaggcct 300

caggttctga cc 312

<210> 3045
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 3045

gtcgcangca cgcntacgtn anctcggnnt tnggctcgag cnagggttgt nctgccgcan 60

tgaagcaggc tggtgctcgt gtcatcgtga ccgagattga tcccatctgt gcccttcagg 120

ctctcatggn aggccttcag gntctgacct tggaggatgt tgtttctgan gctgatatct 180

ttgtcaccac caccggtaac aaggacatca tcatggttga ccacatgagg aaaatgaaga 240

acaatgccat tgtttgcnac attggtcact ntgacaatga gatcgacatg cttgggctgg 300

agaacta 307

<210> 3046
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 3046

tccgtgcacg cgtacgtaag ctcggaattc ggctcgagnt ggatgcgcca ctggacaccc 60

cagttttgtg atgtcctgct ccttcaccaa ccaggtcatt gctcagcttg agttgtggaa 120

ggagaagagt accggcaagt acgagaagaa ggtttacgtt ttgcccaagc accttgatga 180

gaaggtggct gcacttcacc tgggcaaact tggngctaag ctgacccagc ttagcaagtc 240

ccaggctgat tacatcagtg tgcctgttga gggtccatac aagcctgctc actacaggta 300

ctaagtgatt gaga 314

<210> 3047
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 3047

cntacgtaag ctcggaattc ggctcgaggt cctgttattt ctcagcgcgt aaagcatggc 60

tttgttggtg gagaaaacca cgagtggtcg cgagtacaag gtcaaggacc tttcccaggc 120

cgacttcggc cgcctcgaga tcgagctngc cgaggttgag atgcccggcc tcatggcctg 180

tcggaccgag ttcggcccct cccagccctt caagggggcc cgcatcaccg gctcctccac 240

atgaccatcc agaccgccgt tctcattgag accctcaccg cccttggcgc cgaggtccgc 300

tggtgctctg caacat 316

<210> 3048
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 3048

gttgtttctg aggctgatat ctttgtcacc accaccggta acaagggaca tcatcatggt 60

tgaccacatg aggaaaatga agaacaatgc cattgtttgc aacattggtc actttgacaa 120

tgagatcgac atgcttgggc tggagaacta ccccggcgtg angcgcatca ccatcaagcc 180

ccaaactgac agatgggtct tccctgagac caacaccggt atcattgtct tggctgaggg 240

tcgattgatg aacttggga 259

<210> 3049
<211> 346
<212> nucleic acid
<213> Glycine max

<400> 3049

agaacgnnaa nangtcgcat gcacgcgtac gtaagctcgg gaattcggct cgagcagtgc 60

cgccgtcttc ncctggaagg gtgagaccct ccaggagtac tggtggtgca ccgagcgcgc 120

cctcgactga ngccccggtg gtggacccga cctcatcgtc gacgacggtg gtgacgctac 180

ccttctcatc cacgaaggcg tcaaggccga ggagctctat gagaagaccg gcgaactccc 240

cgacccnaac tccaccgaca acgccgagtt tcagatcgtg cttaccatca tcagagatgg 300

gttgaagacc gatcccacca ggtaccgcaa agtgaaggag cgtctc 346

<210> 3050

<211> 319
<212> nucleic acid
<213> Glycine max

<400> 3050

gangcacncg tacgtnagct cggaattcgg ctcgagctct ttctctagtc ctgttatttc 60

tcagcgcgta aagcatggct ttgttggtgg agaaaaccac gagtggtcgc gagtacaagg 120

tcaaggacct ttcccaggcc gacttcggcc gcctcgagat cgagctggcc gaggttgaga 180

tgcccggcct catggcctgt cggaccgagt tcggcccctc ccagcccttc aaggggggccc 240

gcatcaccgg ctccctccac atgaccatcc agaccgccgt tctcattgag accctcaccg 300

cccttggcgc cgaggtccg 319

<210> 3051
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3051

ntacgcangc acncgtacgt nagctcggaa ttcggctcga ggtaaagcat ggctttgttg 60

gtggagaaaa ccacgagtgg tcgcnagtac aaggtcaagg acctttccca ggccgacttc 120

ggccgcctcg agatcgagct ggccgaggtt gagatgcccg gcctcatggc ctgtcggacc 180

gagttcggcc cctcccagcc cttcaagggg gcccgcatca ccggctccct ccacatgacc 240

atccagaccg ccgttctcat tgagaccctc accgcncttg gcgccgangt ccgctggt 298

<210> 3052
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 3052

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tgttatttct cagcgcgtaa 60

agcatggctt tgttggtgga gaaaaccacg agtggtcgcg agtacaaggt caaggacctt 120

tcccaggccg acttcggccg cctcgagatc gagctggccg aggttgagat gcccggcctc 180

atggcctgtn cggaccgagt tcggcccctc ccagcccttc aaggggggccc gcatcaccgg 240

ctccctccac atgaccatcc agaccgccgt tctcattgag accctcaccg cccttggcgc 300

cgaggtccgc tggtgct 317

<210> 3053
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 3053

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gcaagatgaa ggagcgtctc 60

gttggggttt ctgaggaaac caccactgga gttaagaggc tctatacaga tgcaggcgaa 120

tgggactctt ctcttccctg ctattaatgt caatgactct gtcaccaaga gcaagtttga 180

caacttgtat gggtgccgtc actctctccc tgatggtctc atgagggcta ccgatgttat 240

gattgctgga aaggtggctg ttgtggctgg atatggtgat gttggcaagg gttgtgctgc 300

tgcaatgaag c 311

<210> 3054
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 3054

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catcatcatg gttgaccaca tgangaaaat gaagaacaan cgccattgtt tgcaacattg 120

gtcactttga caatgagatc gacatgctgg ggctggagaa ctaccccggc gtgaagcgca 180

tcaccatcaa gccccaaacc gacagatggg tcttccccga gaccaatgtc ggcatcattg 240

tcttggccga gggtcgtttg atgaacttgg gatgcgccac aggacaccct agttttgtga 300

tgtcctgc 308

<210> 3055
<211> 347
<212> nucleic acid
<213> Glycine max

<400> 3055

cntnnnnatg nanacgtcgc atgcacgcgt acgtnaagct cggaattcgg ctcgagctct 60

ttctctagtc ctgttatttc tcagcgcgta aagcatggct ntgttggtgg agaaaaccac 120

gagtggtcgc gagtacaagg tcaaggacct ttcccaggcc gacttcggcc gcctcgagat 180

cgagctggcc gaggttgaga tgcccggcct catggnctgt nggaccgagt tcggcccctc 240

ccancccttc aagggggccc gcatcaccgg ctccctccac atgaccatcc agancgccgt 300

tctcattgag accctcaacg gccttggcgc cgangtccgc tggtgct 347

<210> 3056
<211> 349
<212> nucleic acid
<213> Glycine max

<400> 3056

cgcgtacgta agctcggaat tcggctcgag ngacgacggt ggtgacgcta cccttctcat 60

ccacgaaggc gtcaaggccg aggagctcta tgagaagacc ggcgaactcc ccgaccccaa 120

ctccaccgac aacgccgagt ttcagatcgt gcttaccatc atcagagatg ggttgaagac 180

cgatcccacc aggtaccgca agatgaagga gcgtctcgtt ggggtttctg aggaaaccac 240

cactggagtt aagaggctct atcagatgca ggcgaatggg actcttctct tccctgctat 300

taatgtcaat gactctgtca ccaagagcga gttgacaatt gtatgggtg 349

<210> 3057
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 3057

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cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac aaggtcaagg 120

acctttccca ggctgacttc ggccgcctcg agatcgagct ggccgaggtc gagatgcccg 180

gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg gcccgcatca 240

ccggctccct ccacatgacc atccagaccg ccgttctcat tgagaccctc accgcccttg 300

gcgcnnaggt ccgct 315

<210> 3058
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 3058

cnatntttgn acgcgtacgt aagctcggaa ttcggctcga cctcgagccg attcggctcg 60

aggttatttc tcagcgcgta aagcaacggc tttgttggtg gananaacca cgagtggtcg 120

cnngtacaag gtcaaggacc tttcccaggc cgacttcggc cgcctcgaga tcgagctggc 180

cgaggttgag atgcccggcc tcatggcctg tcggaccgag ttcggcccct cccanccctt 240

caagggggcc cgcatcaccg gctccctcca catgaccatc cagaccgccg ttctcattga 300

gaccctcacc gcccttggcg ccgaggtccg ctggtgctc 339

<210> 3059
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 3059

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg aaaatgaaga acaatgccat 60

tgtttgcaac attggtcact ttgacaatga gatcgacatg ctggggctgg agaactaccc 120

cggcgtgang cgcatcacca tcaagcccca aaccgacaga tgggtcttcc ccgagaccaa 180

tgtcggcatc attgtcttgg ccgagggtcg tttgatgaac ttgggatgcg ccacaggaca 240

ccctagtttt gtgatgtcct gctctcacca accaggtcat tgctcagctt gagttgtgga 300

a 301

<210> 3060
<211> 331
<212> nucleic acid
<213> Glycine max

<400> 3060

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ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

agatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg 240

cccgcatcac cggctccctc cacatgacca tccagaccgc cgttctcatt gagaccctca 300

ccgcccttgg cgccgagtcc gtatgtcctg c 331

<210> 3061
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3061

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagt tgacaacttg tacgggtgcc 60

gtcactctct ccctgatngt ctgatgaggg ctactgatgt gatgattgct ggaaaggtgg 120

ctgttgtggc tggatatggt gatgttggca agggttgtgc tgctgcattg aagcaggctg 180

gtgctcgtgt catcgtgact gagattgacc ccatttgtgc ccttcaggct ctcatggaag 240

gccttcaggt tctgaccttg gaggatgttg tttctgaggc tgatatcttg tcac 294

<210> 3062
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 3062

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gctattaatg tcaatgactc tgtcaccaag agcaagtttg acaacttgta tgggtgccgt 120

cactctctcc ctgatggtct catgagggct accgatgtta tgattgctgg aaaggtggct 180

gttgtggctg gatatggtga tgttggcaag ggttgtgctg ctgcaatgaa gcaggctggt 240

gctcgtgtca tcgtgaccga gattgatccc atctgtgccc ttcaggctct c 291

<210> 3063
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 3063

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gaggaaacca ccactggagt 60

taagaggctc tatcagatgc aggcgaatgg gactcttctc ttccctgcta ttaatgtcaa 120

tgactctgtc accaagagca agtttgacaa cttgtatggg tgccgtcact ctctccctga 180

tggtctcatg agggctaccg atgttatgat tgctggaaag gtggctgttg tggctggata 240

tggtgatgtt ggcaagggtt gtgctgctgc aatgaagcag gctggtgctc gtg 293

<210> 3064
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 3064

ctnncangnc nccgtacgta agctcggaat tcggctcgag ngaaaatgaa gaacaatgcc 60

attgtttgca acattggtca ctttgacaat gagatcgaca tgcttgggct ggagaactac 120

cccggcgtga agcgcatcac catcaagccc caaactgaca gatgggtctt ccctgagaca 180

acaccggtat cattgtcttg gctgagggtc gattgatgaa cttgggatgc gccactggac 240

accccagttt tgtgatgtcc tgctccttca ccaaccaggc atgctcagct tgagttgtgg 300

aaggagaaga gta 313

<210> 3065
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 3065

gtcgcatgca cgcgtacgtn agctcggaat tcggctcgag ggaaaatgaa gaacaatgcc 60

attgtttgca acattggtca ctttgacaat gagatcgaca tgcttgggct ggagaactac 120

cccggcgtga agcgcatcac catcaagccc caaactgaca gatgggtctt ccctgagacc 180

aacaccggta tcattgtctt ggctgagggt cgattgatga acttgggatg cgccactgga 240

caccccagtt ttgtgatgtc ctgctccttc accaaccagg tcatgctcag cttgagttgt 300

g 301

<210> 3066
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 3066

agtcgcnngc acgcgtacgt aagctcggaa ttcggctcga ggttatttct cagcgcgtaa 60

agcatggctt tgttggtgga gaaaaccacg agtggtcgcg agtacaaggt caaggacctt 120

tncccaggcc gacttcggcc gcctcgagat cgagctggcc gaggttgaga tgcccggcct 180

catggcctgt cggccgagtt cggcccctcc cagcccttca agggggcccg catcaccggc 240

tccctccaca tgaccatcca gaccgccgtt ctcattgaga ccctcaccgc ccttggcgcc 300

gaggtccgct ggtgctctgc aacat 325

<210> 3067
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 3067

cgcngcacgc gtacgtaagc tcggaattcg gctcgagacc gatcccacca ggtaccgcaa 60

gatgaaggag cgtctcgttg gggtttctga ggaaaccacc actggtgtta agaggctata 120

tcagatgcag gcgaatggga ctctactctt ccctgctatt aatgtcaatg actctgttac 180

caagagcaag tttgacaact tgtacgggtg ccgtcactct ctccctgatg gtctgatgag 240

ggctactgat gtgatgattg ctggaaangt ggctgttgtg gctggatatg gtgaan 296

<210> 3068
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 3068

cgtagtaacg tangaantcn gntcggctcn aantnntttc tcagcgcgta aagcatggct 60

ttgttggtgg anataaccac gagtggtcgc gagtacaagg tcaaggacct ttcccangcc 120

gacttcggcc gcctcgagat cgagctggcc gangttgana tgcccggcct catggcctgt 180

cggaccgagt tcggcccctc ccagcccttc aagggggccc gcatcaccgg ctccctccac 240

atgaccatcc agaccgccgt tntcattgag accctcaccg cccttngngc cgaggnccgc 300

tggt 304

<210> 3069
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 3069

cgcangcacg cgtacgtaag ctcggaattc ggctcgaggc cgtcttcncc tggaagggtg 60

agaccctcca ggagtactgg tggtgcaccg agcgcgccct cgactggggc cccggtggtg 120

gacccgacct catcgtcgaa cgacggtggt gacgctaccc ttctcatcca cgaaggcgtc 180

aaggccgagg agctctatga gaagaccggc gaactccccg accccaactc caccgacaac 240

gccgagtttc agatcgtgct taccatcatc agagatgggt tgaagaccga tcccaccagg 300

taccgcaaga tgaa 314

<210> 3070
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 3070

gtcgcangca cgcgtacgta agctcggaat tcggctcgag agaaaatgaa gaacaatgcc 60

attgtttgca acattggtca ctttgacaat gagatcgaca tgctggggct ggagaactac 120

cccggcgtga ngcgcatgca ccatcaagcc ccaaaccgac agatgggtct tccccgagac 180

caatgtcggc atcattgtct tggccgaggg tcgtttgatg aacttgggat gcgccacagg 240

acaccctagt tttgtgatgt cctgctcctt caccaaccag gtcattgctc agcttgagt 299

<210> 3071
<211> 302
<212> nucleic acid
<213> Glycine max

<400> 3071

aacgcangca cgcgtacgta agctcngaat tcggctcgag gtttganaac ttgtacgggn 60

gccgtcactc tctccctgat ggnctgatga gggctactgt ngtgatgatt gctggaaagg 120

tggctgttgt ggctggatat ggtgatgttg gcaanggttg tgctgctgca ttgaagcagg 180

ctggtgctcg tgtcatcgtg actgagattg accccatttg tgcccttcag gctctcatgg 240

aaggccttca ggttctacct tggaggatgt tgtttctgag gctgatatct ttgtcaccac 300

ca 302

<210> 3072
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 3072

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gggtcttccc cgagaccaat 60

gtcggcatca ttgtcttggc cgagggtcgt ttgatgaact tgggatgcnc cacaggacac 120

cctagttttg tgatgtcctg ccccttcacc aaccaggtca ttgctcagct tgagttgtgg 180

aaggagaaga gtaccggcaa gtacgagaag aaagtttacg ttttgcccaa gcaccttgat 240

gagaaggtgg ctgcncttca ccttggcaaa cttggngcta agctcacca 289

<210> 3073
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 3073

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gtttgacaac ttgtacgggt 60

gccgtcactc tctccctgat ggtctgatga gggctactga tgtgatgatt gctggaaagg 120

tggctgttgt ggctggatat ggtgatgttg gcaagggttg tgctgcncca ttgaagcngg 180

ctggtgctcg tgtcatcgtg actgagattg accccatttg tgcccttcag gctctcntgg 240

aaggccttca ggttctgacc ttggaggatg ttgtttctga ggctga 286

<210> 3074
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 3074

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gtaagatgaa ggagcgtctc 60

gttggggttt ctgaggaaac caccactgga gttaagaggc tctatcagat gcaggcgaat 120

gggactcttc tcttccctgc tattaatgtc aatgactctg tcaccaagag caagtttgac 180

aacttgtatg ggtgccgtca ctctctccct gatggtctca tgagggctac cgatgttatg 240

attgctggaa aggtggctgt tgtggctgga tatggtgatg ttggc 285

<210> 3075
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 3075

gtcncngcac gcgtacgtna gctcggaatt cggctcgagg ncacgggtaa caaggacatc 60

atcatggttg accacatgaa gaaaatgaag aacaatgcca ttgtttgcaa cattggtcac 120

tttgacaatg agatcgacat gctggggctg gagaactacc ccggcgtgan gcgcattcac 180

catcaagccc caaaccgaca gatgggtctt ccccgagacc aatgtcggca tcattgtctg 240

ggccgagggt cgtttgatga antgggatgc gccacaggac accctagttt tgtgatgtcc 300

<210> 3076
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 3076

ccgaggtccg ctggtgctcc tgcaacatct tctccaccca ggaccacgcc gccgccgcta 60

ttgcccgcna cagtgccgcc gtcttcncct ggaagggtga gaccctccag gagtactggt 120

ggtgcaccga gcgcgccctg cgactggggc cccggtggtg gacccgacct catcgtcgan 180

nacggtggtg acgctaccct tctcatccag gaaggcgtca aggccgagga gctctatgag 240

aagaccggcg aactccccga ncct 264

<210> 3077
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 3077

ngcangcacg cgtacgtaan ctcggaattc ggctcgagta gtcctgttat ttctcagcgc 60

gtaaagcatg gctttgttgg tggagaaaac cacgagtggt cgcgagtaca aggtcaanga 120

cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg agatgcccgg 180

cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg cccgcatcac 240

cggctccctc cacatgacca tcnantcaaa ngttctcatt gagaccctca ccgcccttgg 300

cgccgaggtc 310

<210> 3078
<211> 325
<212> nucleic acid

<213> Glycine max

<400> 3078

ncnatgcacg cgtacgtaag ctcggaattc ggctcgagct caccactccc tccactctct 60

ttctctagtc ctgttatttc tcagcgcgta aagcatggct ttgttggtgg agaaaaccac 120

gagtggtcgc gagtacaagg tcaaggacct ttcccaggcc gacttcggcc gcctcgagat 180

cgagctggcc gaggttgaga tgcccggcct catggcctgt cggaccgagt tcggcccctc 240

ccagcccttc aaggggggccc gcatcaccgg ctccctccac atgaccatcc agancgccgt 300

tctcattgag accctcaccg ccctt 325

<210> 3079
<211> 307
<212> nucleic acid
<213> Glycine max

<400> 3079

gnantngtcg cacgcacgcg tacgtaagct cggaattcgg ctcgaggngg tttctgagga 60

aaccaccact ggagttaaga ggctctatca gatgcaggcg aatggnactc ttctcttccc 120

tgctattaat gtcaatgact ctgtcaccan gagcaagttt gacaacttgt atgggngccg 180

tcactctctc cctgatggtc tcatganngc taccgatntt atgattgctg gaaaggtggc 240

tgttgtggcn ggatatggtg atgttggcan gggttgtgct gctncaatnn agcaggctgg 300

tgctcnc 307

<210> 3080
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3080

nntncnanag tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagt atttctcagc 60

gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 120

gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgccc 180

ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcaaggg ggcccgcatc 240

accggctccc tccacatgac catccaganc gccgttctca ttgagaccct caccgccctt 300

ggn 303

<210> 3081
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 3081

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagg ttatttctca gcgcgtaaag 60

catggctttg ttggtggaga aaaccacgag tggtcgcgag tacaaggtca aggacctttc 120

ccaggccgac ttcggccgcc tcgagatcga gctggccgag gttgagatgc ccggcctcat 180

ggcctgtcgg accgagttcg gcccctccca gcccttcaag gggcccgca tcaccggctc 240

cctccacatg accatccaga ccgccgttct cattgagacc ctcaccgccc ttg 293

<210> 3082
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 3082

agtcgcatgt ntagtacgta agctcggaat tcggctcgag ctctagtcct gttatttctc 60

agcgcgtaaa gcatggcttt gttggtggag aaaaccacga gtggtcgcga gtacaaggtc 120

aaggaccttt cccaggccga cttcggccgc ctcgagatcg agctggccga ggtcgagatg 180

cccggcctca tggcctgttc ggaccgagtt cggcccctcc cagcccttca aggggcccg 240

catcaccggc tccctccaca tgaccatcca gaccgccgtt ctcattgaga ccctcaccgc 300

ccttggcgc 309

<210> 3083
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 3083

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tagtcctgtt atttctcagc 60

gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 120

gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgccc 180

ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcaaggg ggcccgcatc 240

accggctccc tccacatgac catccagacc gccgttctca ttgagaccct caccg 295

<210> 3084
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3084

gaanggncaa tgcancgtac gtaagctcgg aattcggctc gaggtcctgt tatttctcag 60

cgcgtaaagc atggctttgt tggtggagaa aaccacgagt ggtcgcgagt acaaggtcaa 120

ggacctttcc caggccgact tcggccgcct cgagatcgag ctggccgagg ttgagatgcc 180

cggcctcatg gcctgtcgga ccgagttcgg cccctcccag cccttcaagg gggcccgcat 240

caccggctcc ctccacatga ccatccagan cnncgttctc attgagaccc tcaccgccct 300

tgg 303

<210> 3085
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 3085

gtcgcnngca cgcgtacgta agctcggaat tcggctcgag tagtcctgtt atttctcagc 60

gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 120

gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgccc 180

ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcaaggg ggcccgcatc 240

accggctccc tccacatgac catccagacc gccgttctca ttgagaccct cac 293

<210> 3086
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 3086

gtcgcntagn cncgtacgtn agctcggaat tnggctcgng ctcgagccgc ctcgagccgc 60

tcgagccggt cctgttattt ctcagcgcgt aaagcatgnc tttgttggtg gagaaaacca 120

cgagtggtcg cgagtacaag gtcaaggacc tttcccaggc cgacttcggc cgcctcgaga 180

tcgagctggc cgaggttgag atgcccggcc tcatggcctg tcggaccgag ttcggcccct 240

cccagccctt caaggggggcc cgcatcaccg gctccctcca catgaccatc cagancgccg 300

ttctcattga gaccctcacc gc 322

<210> 3087
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 3087

attcgcangc acgcgtacgt aagctcggaa ttcggctcga gnatgtcctg ctccttcacc 60

aaccaggtca ttgctcagct tgagttgtgg aaggagaaga gtaccggcaa gtacgagaag 120

aaagtttacg ttttgcccaa gcaccttgat gagaaggtgg ctgcacttca ccttggcaaa 180

cttggagcta agctcaccaa gcttagcccg gcccaggctg attacatcag tgtgcctgtt 240

gagggtccat acaagcctgc tcattacagg tactaagtaa ttgagattat caacggaaa 299

<210> 3088
<211> 321
<212> nucleic acid
<213> Glycine max

<400> 3088

gtcgcangca cgcgtacgta agctcggaat tnggctcgng ctcgagccgc tcgagccgct 60

cgagccggtc ctgttatttc tcagcgcgta aagcatggnn ttgttggngg agaaaaccac 120

gngtggtcgc gagtacaagg tcaaggacct ttcccaggcc gacttcggcc gcctcgagat 180

cgagctggcc gaggttgaga tgcccggcct catggcctgt cggaccgagt tcggcccctc 240

ccagcccttc aaggggggccc gcatcaccgg ctccctccac atgaccatcc agaccgccgt 300

tctcattgag accctcaccg c 321

<210> 3089
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 3089

tgcatagtcg catgcacgcg tacgtaagct cggaattcgg ctcgagtcta gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

agatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg 240

cccgcatcac cggctccctc cacatgacca tccagtccgc cgttctcatt gagaccctca 300

ccgc 304

<210> 3090
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 3090

tcncangcac gcgtacgtaa gctcggaatt cggctcgagc cactctcttt ctctagtcct 60

gttatttctc agcgcgtaaa gcatggcttt gttggtggag aaaaccacga gtggtcgcga 120

gtacaaggtc aaggaccttt cccaggccga cttcggccgc ctcgagatcg agctggccga 180

ggttgagatg cccggcctca tggcctgtcg gaccgagttc ggcccctccc agcccttcaa 240

gggggcccgc atcaccggct ccctccacat gaccatccag accgccgttc tcattgagac 300

cctcacccct tggcgccg 318

<210> 3091
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 3091

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag gaaaaccacg agtggtcgcg 60

agtacaaggt caaggacctt tcccaggccg acttcggccg cctcgagatc gagctggccg 120

aggttgagat gcccggcctc atggcctgtc ggaccgagtt cggcccctcc cagcccttca 180

agggggcccg catcaccggc tccctccaca tgaccatcca gaccgccgtt ctcattgaga 240

ccctcaccgc ccttggcgnn gacnncgggn nctnaaaaa 279

<210> 3092
<211> 301
<212> nucleic acid

<213> Glycine max

<400> 3092

gcacgcgtac gtaagctcgg aattcggctc gagnttctct agtcctgtta tttctcagcg 60

cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcnagtac aaggtcaagg 120

acctttccca ggccgacttc ngccgcctcg agatcgagct ggccgaggtt gagatgcccg 180

gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg gcccgcatca 240

ccggctccct ccanatgacc atccagaccg ccgttctcat tgagacnctc accgcccttg 300

g 301

<210> 3093
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 3093

aggacatcat catggttgac cacatgaaga aaatgaagaa caatgccatt gtttgcaaca 60

ttggtcactt tgacaatgag atcgacatgc tggggctgga gaactacccc ggcgtgangc 120

gcatcaccat caagccccaa accgacagat gggtctcccc gagaccaatg tcggcatcat 180

tgtctggccg agggtcgttt gatgaacttg ggatgcgcca caggacaccc tagttttgtg 240

at 242

<210> 3094
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3094

nngcacgcgt acgtaagctc ggaattcggc tcgagctctc tttctctagt cctgttattt 60

ctcagcgcgt aaagcatggc tttgttggtg gagaaaacca cgagtggtcg cgagtacaag 120

gtcaaggacc tttcccaggc cgacttcggc cgcctcgaga tcgagctggc cgaggtcgag 180

atgcccggcc tcatggcctg tcggaccgag ttcggcccct cccagccctt caaggggggcc 240

cgcatcaccg gctcctccac atgaccatcc agaccgccgt tctcattgag accctcaccg 300

ccc 303

<210> 3095
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 3095

gtcgnngcac gcgtacgtaa gctcggaatt cggctcgaga gaccctccag gagtactggt 60

ggtgcaccga gcgcgccctc gactggggcc ccggtggtgg acccgacctc atcgtcgacg 120

acggtggtga cgctaccctt ctcatccacg aaggcgtcaa ggccgaggag ctctatgaga 180

agaccggcga actccccgac cccaactcca ccgacaacgc cgagtttcag atcgtgctta 240

ccattcatca gagatgggtt gaagaccgat cccaccagtt accgcaagat gaaggagcgt 300

ctcgttgggg t 311

<210> 3096
<211> 316
<212> nucleic acid
<213> Glycine max

<400> 3096

agnanatgaa gcgtacgtaa gctcggaatt cggctcgagc tctagtcctg ttatttctca 60

gcgcgtaaag catgggcttn nttggtggag aaaaccacga gtggtcgcga gtacaaggtc 120

aaggaccttt cccaggccga cttcggccgc ctcgagatcg agctggccga ggttgagatg 180

cccggcctca tggcntgtcg gaccgagttc ggcccctccc agcccttcaa gggggcccgc 240

atcaccggct ccctccacnt gaccatccan anagncgtct cattgagacc ctcaccgccc 300

ttggcgccga ggtccg 316

<210> 3097
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 3097

ngcncgcgtn cgtnngctcg gnnttcggct cgagctcttt ctctngtcct gtnntttctc 60

agcgcgtaan gcntggcttt gttggtggag aaaaccacga gtggtcgcga gtncaaggtc 120

naggnccttt cccaggccgn cttcggccgc ctcgagatcg agctggccga ggttgagnng 180

cccggcctca tggcctgtcg gaccgagttc ggcccctccc anccccttcaa gggggcccgc 240

atcaccggct ccctccacat gaccntccag accgccgttc tcattgagac cctcancgcc 300

cttggcgcc 309

<210> 3098
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 3098

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggcaagatga aggagcgtct 60

cgttggggtt tctgaggaaa ccaccactgg agttaagagg ctctatcaga tgcaggcgaa 120

tgggactctt ctcttccctg ctattaatgt caatgactct gtcaccaaga gcaagtttga 180

caacttgtat gggtgccgtc actctctccc tgatggtctc atgagggcta ccgatgttat 240

gattgctgga aaggtggctg ttgtggctgg at 272

<210> 3099
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 3099

ctgtganttc tcagcgcgta aagcatggct ttgttggtgg agaaanccac gagtggtcgc 60

gantacaang tgcaagganc tttcccaggc cgacttcggc ngnctcgaga tcgagctggc 120

cgaggttgag atgcccggcc tcatggcctg tcggnccgag ttcggcncct cccagcccctt 180

caagggggcn cgcatcaccg gntccctcca catgaccatc cagancgccg ttctcatttg 240

agatcctnat cgccccttggn gccgnaggtc cgctggtgct cctgnaacat cgtctccatc 300

caggaccacg ccncngccgc tattgcccgg anagtgccg 339

<210> 3100
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 3100

gtcctgttat ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt 60

cgcgagtaca aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg 120

gccgaggttg agatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc 180

ttcaaggggg cccgcatcac cggctccctc cacatgacca tccagctccg ccgttctcat 240

tgagaccctc accgcccttg gc 262

<210> 3101
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 3101

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag ggttgtgctg ctgcattgaa 60

gcaggctggt gctcgtgtca tcgtgactga gattgacccc atttnggccc ttnaggttct 120

catggaaggc cttcaggttc tgaccttgga ggatgttgtt tctgaggctg atatctttgt 180

caccaccacg ggtaacaagg acatcatcat ggttgaccac atgaagaaaa tganganean 240

tgccattgtt tgcaacattg gtcactttga caatga 276

<210> 3102
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 3102

cgtcgcatgc acgcgtncgt nagctcggna ttcggctcga gctttctcta gtcctgttnt 60

ttctcagcgc gtaaagcatg gctttnttgg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

agatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg 240

cccgcatcac cggctccctc cacatgacca tccagaccgc cgttctcatt gagacc 296

<210> 3103
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3103

tcgcangcac gcgtacgtaa agctcggaat tcngctcgag ngcccgcatc accggctccc 60

tttcacatga ccatccagac cgctgtcctc atcgagaccc tcaccgctct cggcgccgag 120

gttcgctggt gctcctgcaa catcttctcc actcaggacc acgccgccgc cgccatcgcc 180

cgtgacagcg ccgccgtctt cgcctggaag ggtgagaccc tccaggagta ctggtngtgc 240

accgagcncg ccctcgactg gggccccggc ggcggccccg acctcatcgt cgac 294

<210> 3104
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 3104

tcgnnngcac gcgtacgtaa gctcggaatt cggctcgagc tagtcctgtt atttctcagc 60

gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 120

gacctttccc aggccgactt cggccncctc gagatcgagc tggccgaggt tgagatgccc 180

ggcctcatgg cctgtcggac cgagttcggc cctcccagc ccttcaaggg ggcccgcatc 240

accggctccc tccacatgac catccagacc gccgttctca ttgagaccct c 291

<210> 3105
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 3105

cgcangcacg cgtacgtnag ctcggaattc ggctcgagnc ccgacctcat cgtcgacgac 60

ggtggtgacg ctacccttct catccacgaa ggcgtcaagg ccgaggagct ctatgagaag 120

accggcgaac tccccgaccc caactccacc gacaacgccg agtttcagat cgtgcttacc 180

atcatcagag atgggttgaa gaccgatccc accaggtacc gcaagatgaa ggagcgtctc 240

gttggggttt ctgaggaaac caccactgga gttaagaggc tctatcagat gcaggcgatt 300

gggccntttn t 311

<210> 3106
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 3106

ngtcncatgc acgcgtacgt aagctcggaa ttcggctcga gctcagcgcg taaagcatgg 60

ctttgttggt ggagaaaacc acgagtggtc gcgagtacaa ggtcaaggac ctttcccagg 120

ccgacttcgg ccgcctcgag atcgagctgg ccgaggttga gatgcccggc ctcatggcct 180

gttcggaccg agttcggccc ctcccagccc ttcaaggggg cccgcatcac cggctccctc 240

cacatgacca tccagaccgc cgttctcatt gagaccctca ccgccttgnc gccgaggtcc 300

g 301

<210> 3107
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 3107

cgcangcacg cgtacgtaag ctcggaattc ggctcgagga ggaaaccacc actggagtta 60

agaggctcta tcagatgcag gcgaatggga ctcttctctt ccctgctatt aatgtcaatg 120

actctgtcac caagagcaag tttgacaact tgtatgggtg ccgtcatctc tccctgatgg 180

tctcatgagg gctaccgatg ttatgattgc tggaaaggtg gctgttgtgg ctggatatgg 240

tgatgttggc aagggttgtg ctgctgcaat gangcaggtg gtccccgttc a 291

<210> 3108
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3108

tttangcacg cntacgtaag ctcggaattc ggctcgagtc caggagtact ggtggtgcac 60

cgagcgcgcc ctcgactggg gccccggtgg tggacccgac ctcatcgtcg acgacggtgg 120

tgacgctacc cttctcatcc acgaaggcgt caaggccgag gagctctatg agaaaccggc 180

gaactccccg accccaactc caccgacaac gccgagattc agatcgtgct taccatcatc 240

agagatgggt tgaagaccga tcccaccagg taccgcaaga tgaaggagcg tctcgttg 298

<210> 3109
<211> 341
<212> nucleic acid
<213> Glycine max

<400> 3109

gtcgcntgaa gcgnangcac gcgtacgtaa gctcggaatt cggctcgagg aaaatgaaga 60

acaatgccat tgtttgcaac attggtcact ttgacaatga gatcgacatg ctggggctgg 120

agaactaccc cggcgtgaag cgcatcacca tcaagcccca aacngacaga tgggtcttcc 180

ccgagaccaa tgtcggcatc attgtcttgg ccgagggtcg tttgatgaac ttgggatgcg 240

ccacaggaca ccctagtttt gtgatgtctg tnccttcacc aaccaggtca tgctcagttg 300

agttgtggaa angagaagag taccggcaag tacgagaagn a 341

<210> 3110
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 3110

ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gcggctcgag gcaacatctt 60

ctccacccag gaccangccg ccgccgctat tgcccgcgac agtgcngccg tcttcgcctg 120

gaagggtgan accctccagg agtactggtg gtgcaccgag cgcgccctcg actggggccc 180

cggtggtgga cccgacctca tcgtcgacga cggtggtgac gctacccttc tcatccacga 240

aggcgtcaag gccgaggagc tctatnagaa gaccggcga 279

<210> 3111
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 3111

ccaccangta ccgcaagatg aaggagcgtc tcgttggggt ttctgaggaa accaccactg 60

gtgttaanan gctatatcag atncaggcna atgggantct actcttccct gctattaatg 120

tcaatgactc tgttaccaag agcaagtttg acaacttgta cgggtgccgt cactctctcc 180

ctgatggtct gatgagggct actgatgtga tgattgctgg aaaggtggct gttgnggccc 240

ggatanggtg atnttggcaa gggttgngcn c 271

<210> 3112
<211> 293
<212> nucleic acid

<213>	Glycine max

<400>	3112

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gtctctagtc ctgttatttc 60

tcagcgcgta aagcatggct ttgttggtgg agaaaaccac gantggtcgc gagtacaagg 120

tcaaggacct ttcccaggcc gacttcggcn gcctcgagat cgagctggcc gaggttgaga 180

tgcccggcct catggcctgt cggaccgagt tcggcccctc ccagcccttc aaggggggccc 240

gcatcaccgg ctccctccac atgaccatcc agaccgccgt tctcattgag acc 293

<210>	3113
<211>	301
<212>	nucleic acid
<213>	Glycine max

<400>	3113

nngtcgcang cacgcgtacg taagctcgga attcggctcg agtctttctc tagtcctgtt 60

atttctcagc gcgtaaagca tggctttgtt ggtggagaaa accacgagtn gtcgcgagta 120

caaggtcaag gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt 180

tgagatgccc ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcanggg 240

ggcccgcatc accggctccc tccacatgac catccagacc gccgttctca ttgagaccct 300

n 301

<210>	3114
<211>	283
<212>	nucleic acid
<213>	Glycine max

<400>	3114

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagt nggccgcctc gagatcgagc 60

tggccgaggt tgagatgccg ggcctcatgg cctgccggac cgagttcggc ccatctccag 120

cccttcaagg gggcccgcat caccggcncc cttcacatga ccatcnagac cgctgtcctc 180

atcgagaccc tcaccgctct cggcgccgag gttcgctggt gctcctgcaa catcttctcc 240

actcaggacc acgccgccgc cgccatcgcc cgtgacagcg ccg 283

<210>	3115

<211> 313
<212> nucleic acid
<213> Glycine max

<400> 3115

gtcgcangca cgcgtacgtn nagctcggaa ttcggctcga gctttctcta gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgtngg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

anatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg 240

cccgcatcac cggctccctc cacatgccat ccagaccgcc gttctcattg anaccctnac 300

ngcccttggg cga 313

<210> 3116
<211> 305
<212> nucleic acid
<213> Glycine max

<400> 3116

ncgtcgcatg cacgcgtacg tnagctcgga attcggctcg agctctttct ctagtcctgt 60

tatttctcag cgcgtaaagc atggctttgt tggtggagaa aaccacgagt ggtcgcgagt 120

acaaggncna ggacctttcc caggccgact tcggccgcct cgagatcgag ctggccgagg 180

ttgagatgcc cggcctcatg gcctgtcgga ccgagttcgg cccctcccag cccttcaagg 240

gggcccgcat caccggctcc ctccacatga ccatccagan cgccgttctc attgagacct 300

caccg 305

<210> 3117
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 3117

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gttatttctc agcgcgtaaa 60

gcatggcttt gttggtggag aaaaccacga gtggtcgcga gtacaaggtc aaggaccttt 120

cccaggccga cttcggccgc ctcgagatcg agctggccga ggttgagatg cccggcctca 180

tggcctgtcg gaccgagttc ggcccctccc agcccttcaa gggggcccgc atcaccggct 240

ccctccacat gaccatccag acagccgttc tcattgaga 279

<210> 3118
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 3118

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga gntagtcctg ttatttctca 60

gcgcgtaaag catggctttg ttggtggaga aaaccacgag tggtgcgcga gtacaaggtc 120

aaggaccttt cccaggccga cttcggccgc ctcgagatcg agctggccga ggttgagatg 180

cccggcctca tggcctgtcg gaccgagttc ggcccctccc agcccttcaa gggggcccgc 240

atcaccggct ccctccacat gaccatccag accgccgttc tcattgagac cctcaccgcc 300

c 301

<210> 3119
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 3119

ngatgntgcn nncgcccggn agatcggaaa tncgggctcg agctgtgacc tntcaggatc 60

tcanggnagg ccttcaggnt ctgaccttng aggatgttng ttctgaggct gatatcngtg 120

tcaccancca ncggtaacaa ggacatcatc atggttgacc acatgangan aatgaagaac 180

aatgccattg tttgcaacat tggtcatttg acaatgagat cgacatgctt gggctggaga 240

actaccccgg cgtgaagcgc atcaccatca agccccaaac tgacagatgg gtcttccctg 300

agaccaacac cggatcatgt ct 322

<210> 3120
<211> 293
<212> nucleic acid
<213> Glycine max

<400> 3120

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctttctct agtcctgtta 60

tttctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac 120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgnccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gcccgcatca ccggctccct ccacatgacc atccagatcg ccgttctcat tga 293

<210> 3121
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 3121

ttcatgcacg cgtacgtaag ctcggaattc ggctcgagga gagagagaga gatctatcta 60

tctatcaaga tggcgttgtt ggttgagaaa acaagcagtg gaagggagta caaggtgaag 120

gacatgacgc aagccgattt cggaagattg gaaatcgagc tggcggaggt tgaaatgccc 180

ggcctcatgt cctcccgcac cgagttcggc ccctctcaac ccttcaaggg cgctaggatc 240

accggctccc tccacatgac catccaaacc gccgtcctca tcgagaccct caccgccctc 300

ggcgccgagg tcc 313

<210> 3122
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 3122

nngatgnacg cgtacgtnag ctcggaattc ggctcgagct ctttctctag tcctgttatt 60

tctcagcgcg taaagcatgg ctttgttggt ggagaaaacc acgagtggtc gcgagtacaa 120

ggtcaaggac ctttcccagg cngacttcgg ccgcctcgag agcgagctgg ccgaggttga 180

gatgcccggc ctcatggcct gtcggaccga gttcggcccc tcccagccct tcaagggggc 240

ccgcatcacc ggctccctcc antgaccatc cagttccgcc gttctcattg agaccctcac 300

cgcccttggc gccga 315

<210> 3123
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 3123

aanagcatgc acgcgtacgt aagctcggaa ttcggctcga gccactctct ttctctagtc 60

ctgttatttc tcagcgcgta aagcatggct ttgttggtgg agaaaaccac gagtggtcgc 120

gagtacaagg tcaaggacct ttcccaggcc gacttcggcc gcctcgagat cgagctggcc 180

gaggttgaga tgcccggcct catggcctgt cggaccgagt tcggcccctc ccagcccttc 240

aagggggccc gcatcaccgg ctccctccac atgaccatcc agaccgccgt tctcatt 297

<210> 3124
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 3124

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctttctct agtcctgtta 60

tttctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac 120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgcccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gcccgcatca ccggctccct ccacatgacc atccagaccg ccgttctcat 290

<210> 3125
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 3125

angtcgcang cacgcgtacg tnagctcgga attcggctcg agagaaaatg aagaacaatg 60

ccattgtttn caacattggt cactttgaca atgagatcga catgctgggg ctgganaact 120

accccggcgt gangcgcatc accatcaagc cccaaaccga cagatggtct tccccgagac 180

caatgtcggc atcattgtct tggccgaggg tcgtttgatg aacttgggat gcgccacagg 240

acaccctagt tttntgatgn cctgctcctt cac 273

<210> 3126
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 3126

ctncgcangc ncgcgtacgt aagctcggaa ttcggctcga gctctttctc tagtcctgtt 60

atttctcagc gcgtaaagca tggctntgtt ggtggagaaa accacgagtg gtcgcgngta 120

caaggtcaag gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt 180

tgagatgccc ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcaaggg 240

ggcccgcatc accggctccc tccacatgac catccaganc gccgttctc 289

<210> 3127
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 3127

anncacgcgt acgtaagctc ngaattcggc tcgagctctt tctctagtcc tgtnatttcn 60

cancgngtaa agcatggctt tnttggtgga gaaaaccacg agtngtcgcn agtacaatgt 120

caaggacctt tcccaggccg acttcggncg cctngagatc ganctggccg aggttganan 180

gcacggcctc atggcctgtc ggaccgagtt cngcccctcc canccсttca agggggcccg 240

catcaccggc tccctccaca tgaccatcca gaccggcgtt ctcattgaga ccctcaccgn 300

cttggcgccg 310

<210> 3128
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 3128

agtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggcgccctcg actggggccc 60

cggtggtgga cccgacctca tcgtcgacga cggtggtgac gctacccttc tcatccacga 120

aggcgtcaag gccgaggagc tctatgagaa gaccggcgaa ctccccgacc ccaactccac 180

cgacaacgcc gagtttcaga tcgtgcttac catcatcaga gatgggttga agaccgatcc 240

caccaggtac cgcaagatga aggagcgtct cgttggggtt tctgaggaaa cc 292

<210> 3129
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 3129

nnngtatgca cgcgtacgta agctcggaat tcggctcgag ctttctctag tcctgttatt 60

tctcagcgcg taaagcatgg ctttgttggt ggagaaaacc acncgtggtg cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

agatgcccgg cctcatggcc tgtcggaccg agttcggccc ctcccagccc ttcaaggggg 240

cccgcatcac cggctccctc cacatgacca tccagancgc cgttctcatt gagaccctc 299

<210> 3130
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 3130

aaaaaagnaa ngtcgcatgc acgcgtacgt aagctcggaa ttcggctcga gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt ccgcgagtac 120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgcccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gcccgcatca ccggctccct ccacatgacc atccagaccg ccgttctcat tgagacctca 300

ccgccttggc gccgaggtcg ctnnn 325

<210> 3131
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 3131

aacgcgtang taagctcgga attcggctcg agntttctca gcgcgtaaag catggctttg 60

ttggtggaga aaaccacgag tggtcgcgag tacaaggtca aggacctttc ccaggccgac 120

ttcggccgcc tcgagatcga gctggccgag gttnagatgc ncggcctcat ggcctgtcgg 180

accgagttcg gnncctncca gcccttcaag gggcncgca tcancggntc cctccacatg 240

accatcnagn ccgccgttct cattgagacc ctc 273

<210> 3132
<211> 286
<212> nucleic acid

<213>   Glycine max

<400>   3132

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctttctct agtcctgtta   60

tttctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac   120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt   180

gagangcccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg   240

gcccgcatca ccggctccct ccacatgacc atccagaccg ccgttc   286

<210>   3133
<211>   288
<212>   nucleic acid
<213>   Glycine max

<400>   3133

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctttctct agtcctgtta   60

tttctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac   120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt   180

gagangcccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg   240

gcccgcatca ccggctccct ccacatgacc atccagatcg ccgttctc   288

<210>   3134
<211>   289
<212>   nucleic acid
<213>   Glycine max

<400>   3134

tcgcangcan gcacgcgtac gtaagctcgg aattcggctc gaggttattt ctcagcgcgt   60

aaagcatggc tttgttggtg gagaaaacca cgagtggtcg cgagtacaag gtcaaggacc   120

tttcccaggc cgacttcggc cgcctcgaga tcgagctggc cgaggttgag atgcccggcc   180

tcatggcctg tcggaccgag ttcggcccct cccagccctt caagggggcc cgcatcaccg   240

gctccctcca natgaccatn cagaccgccg tccctcattg agaccctca   289

<210>   3135
<211>   289
<212>   nucleic acid

<213> Glycine max

<400> 3135

nacgtcgcat gcacgcgtac gtaagctcgg aattcggctc gaggtcgacg acggtggtga 60

cgctaccctt ctcatccacg aaggcgtcaa ggccgaggag ctctatgaga agaccggcga 120

actccccgac cccaactcca ccgacaacgc cgagtttcag atcgtgctta ccatcatcag 180

agatgggttg aagaccgatc ccaccaggta ccgcaagatg aaggagcgtc tcgttggggt 240

ttctgaggaa accaccactg gagttaagag gctctatcag atgcaggcg 289

<210> 3136
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 3136

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tagtcctgtt atttctcagc 60

gcgnaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 120

gacctttccc agnccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgccc 180

ggcctcatgg cctgtcggac cgagttcggc cctcccagc ccttcaaggg ggcccgcatc 240

accggctccc tccacatgac catccatgac accgttctca t 281

<210> 3137
<211> 301
<212> nucleic acid
<213> Glycine max

<400> 3137

gtcgctgcac gcgtacgtaa gctcggaatt cggctcgagc tagttttgtg atgtcctgct 60

cnttcaccan nccaggtcat tgctcagctt gagttgtgga aggagaagag taccggcaag 120

tacgagaaga aagtttacgt tttgcccaag caccttgatg agaaggtggc tgcacttcac 180

cttggcaaan ttggagctaa gctcaccaag cttagcccgg cccaggctga ttacatcagt 240

gtgcctgttg agggtccata caagcctgct cattacaggt actaagtaat tgagattatc 300

a 301

<210> 3138

<211> 286
<212> nucleic acid
<213> Glycine max

<400> 3138

acgtcgcatg cacgcgtacg taagctcgga attcggctcg agctttctct agtcctgtta 60

tntctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac 120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgcccg gcctcatggn ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gnccgcatca ccggctccct ccacatgacc atccagancg ccgttn 286

<210> 3139
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 3139

ngatcgcntn aagtcgcang cacgcgtacg tangctcggn aattcggctc gagntgacaa 60

cttgtacngg tgccgtcact ctctccctga nggtctgatg agggctactg atgtgatgat 120

tgctggaaag gtggctgttg tggctggata tggtgatgtt ggcaagggtt gtgctgctgc 180

attgaagcag gctggtgctc gtgtcatcgt gactgagatt gaccccattt gtgcccttca 240

ggctctcatg gaaggcctca gttctgacct 270

<210> 3140
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3140

ncgattgcac gcgtacgtna gctcggaatt cggctcgagn ngagaccctc caggagtact 60

ggtggtgcac cgagcgcgcc ctacgactgg ggccccggtg gtggacccga cctcatcgtc 120

gacgacggtg angacgctac ccttctcatc cacgaaggcg tcaaggccga ggantctatg 180

agacgaccgg cgaactcccc gaccccaact ccaccgacaa cgccgagttt cagatcgtgc 240

ttaccatcat cnganatggg ttgaagaccg atcccaccag gtaccgcaag atgaagga 298

<210> 3141

<211> 334
<212> nucleic acid
<213> Glycine max

<400> 3141

gangacgcgt acgtnagctc ggaattccgc tcgagctcga gccggggaaa ccaacactgg 60

agttaagagg ctctatcaga tgcnaggcga atgggattcc tctcttccng ntaataaatg 120

tcaatgactc ntgtcaccan gagcnagttt gacaacttgt atgggtgccg tncactctct 180

ccctgatggt ctcatgaggg ctaccgatgt tatgattgct ggaaaggtgg ctgttgtngc 240

tggatatggt gatgttggca anggttgtgc tgctgcaatg nagcaggctg gtgctcgtgt 300

catcgtgnac gagattgatc ccatctgtgc cctc 334

<210> 3142
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 3142

ctctctttct ctagtcctgt tatttctcan cgcgtanagc atggctttgt tggtggagaa 60

aaccacgagt ggtcgcgagt acaaggtcaa ggacctttcc caggccgact tcggccgcct 120

cgagatcgag ctggccgagg ttgagatgcc cggcctcatg gcctgtcgga ccgagttcgg 180

cccctcccag cccttcaagg gggcccgcat caccggctcc ctccacatna cnaanaaatn 240

ncnaantctc attgagaccc tcancg 266

<210> 3143
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 3143

ntgcncnngt acgtaagctc ggaattcggc tcgagctctt tctctagtcc tgttatttct 60

cagcgcgtaa agcatggctt tgttggtgga gaaaaccacg agtggtcgcg agtacaaggt 120

caaggacctt tcccaggccg acttcggccg cctcgagatc gagctggccg aggttgagat 180

gcccggcctc atggcctgtc ggaccgagtt cggcccctcc cagcccttca agggggcccg 240

catcaccggc tccctccaca tgaccatcca ganncgccgt tctcattg 288

<210> 3144
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 3144

ncacgcgtac gtnagctcgg aattcggctc gagcctcgac gacggtggtg acgctaccct 60

tctcatccac gaaggcgtca aggccgagga gctctatgag aagaccggcg aactccccga 120

ccccaactcc accgacaacg ccgagtttca gatcgtgctt ancatcatca gagatgggtt 180

gaagaccgat cccaccaggt ancgcaagat gaaggagcgt ctcgttgggg tttctgagga 240

aaccaccatt ggagttaaga ggntctatca gatgcaggcg aatgggatct tctcttccct 300

gctattaa 308

<210> 3145
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 3145

nntcgcatgc acgcgtacgt aagctcggaa ttcggctcga gctctttctc tagtcctgtt 60

atttctcagc gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta 120

caaggtcaag gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt 180

tgagatgccc ggcctcatgg cctgtcggac cgagttcggc ccctcccagc ccttcaaggg 240

ggcccgcatc accggctccc tccacatgac catccagac 279

<210> 3146
<211> 296
<212> nucleic acid
<213> Glycine max

<400> 3146

cgtcgcangc acgcgtacgt nagctcggaa ttcggctcga gngcgacgcc accctcctca 60

tccacgaggg cgtcaaggcc gaggagctct atgagaagac cggggaactc cccgacccta 120

actccactga caacgccgag ntccagatcg tgcttaccat catcagagat gggttgaaga 180

ccgatcccac caggtaccgc aagatgaagg agcgtctcgt tggggtttct gaggaaacca 240

ccactggtgt taagaggcta tatcagatgc aggcgaatgg gactctactc ttccct 296

<210> 3147
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 3147

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag cgtaaagcat ggctttgttg 60

gtggagaaaa ccacgagtgg tcgcgagtta caaggtcaag gacctttccc aggccgactt 120

cggccgcctc gagatcgagc tggccgaggt tgagatgccc ggcctcaggc ctgttcggac 180

cgagttcggc ccctcccagc ccttcaaggg ggcccgcatc accggctccc tccacatgac 240

catccagacc gccgttctca tgagaccctc accgcccttg gcgccga 287

<210> 3148
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 3148

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctttctct agtcctgtta 60

tttctcagcg cgtaaagcat ggctttgttg gtggagaaaa ccacgagtgg tcgcgagtac 120

aaggtcaagg acctttccca ggccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgcccg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gcccgcatca ccggctccct ccacatgacc atcca 275

<210> 3149
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 3149

atcgtacgta agctcggaat tcggctcgag cttcaccaac caggtcattg ctcagnttga 60

gttgtggatg gagaagagta ccggcaagta cgagaagaag gtttacgttt tgcccaagca 120

ccttgatgag aaggtggctg cacttcacct gggcaaactt ggngctaagc tgacccagct 180

tagcaagtcc caggctgatt acatcagtgt gcctgttgag ggtccataca agcctgctc 239

<210> 3150
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 3150

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctttctctag tcctgttatt 60

tctcagcgcg taaagcatgg ctttgttggt ggagaaaacc acgagtggtc gcgagtacaa 120

ggtcaaggac ctttcccagg ccgacttcgg ccgcctcgag atcgagctgg ccgaggttga 180

gatgcccggc ctcatggcct gtcggaccga gttcggcccc tcccagccct tcaagggggc 240

ccgcatcacc ggctccctcc acatgaccat 270

<210> 3151
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 3151

gtcgcangca cgcgtacgta agctcgggaa ttcggctcga ggtaaagcat ggctttgttg 60

gtggagaaaa ccacgagtgg tcgcgagtac aaggtcaagg acctttccca ggccgacttc 120

ggccgcctcg agatcgagct ggccgaggtt gagatgcccg gcctcatggc ctgtcggacc 180

gagttcggcc cctcccagcc cttcaagggg gcccgcatca ccggctccct ccacatnaca 240

nnnnacngaa aaatgctcat tgagaccctt caccgccnnt gggggcgngg 290

<210> 3152
<211> 310
<212> nucleic acid
<213> Glycine max

<400> 3152

agcannagnt cnngangcgt acgtaagtcg ganttcggct cgagntcttt ctctagtcnt 60

gttatttctc agcggcgtaa agcatgggtt tgttgatgga gnaaaccaac gagtcgttng 120

cgagtacaag gtcaaggacc tttcccaggc cgacttcggc cgcctcgaga tcgagctggc 180

cgaggttgag atgcccggcc tcatggcctg tcgganngag ttcggcccct cccagccctt 240

caagggggcc cgcatcaccg gctccctcca natgaccatc cagaccgccg ttctcattga 300

gagctcacgc 310

<210> 3153
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 3153

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctagtcctgt tatttctcag 60

cgcgtaaagc atggctttgt tggtggagaa aaccacnagt ggtacgcgag tacaaggtca 120

aggacctttc ccaggccgac ttcggccgcc tcgagatcga gctggccgag gttgagatgc 180

ccggcctcat ggcctgtcgg accgagttcg gcccctccca gcccttcaag gggcccgca 240

tcaccggctc cctccacatg accatccaga ccgccgt 277

<210> 3154
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3154

gcangcacgc gtacgtaagc tcggaattcg gctcgagctc tctttctcta gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagctg gccgaggttg 180

agatgcccgg cctcatggcc tntcggaccg agttnggccc cgnccagccc gtnaaggggg 240

cccgcatcnc cggcgctcgc nacaggatca nccagaccgc cgttctcagt ganacccg 298

<210> 3155
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 3155

ngtcgcatgc acgcgtacgt aagctcggna attnnngctc gagctcgagc cgctncgagc 60

cgctccactc tctttctcta gtcctgttat ttctcagcgc gtaaancatg gctnanttgg 120

tggagaaaac cacgagtggt cgcnagtaca aggtcaagga cctttcccag gccgacttcg 180

gcgcctcgag atcgagctgg ccgnggttga gatgcccggc ctcatggcct gtncggaccg 240

agttcggccc ctcccagccc ttcaaggggg cccgcatcac cggctccctc cacatgacca 300

tccagaccgc cgttctca 318

<210> 3156
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 3156

cactctcttt ctctagtcct gttatttctc agcgcgtaaa gcatggcttt gttggtggag 60

aaaaccacga gtggtcgcga gtacaaggtc aaggaccttt cccaggccga cttcggccgc 120

ctcgagatcg agctggccga ggttgagatc ccggcctcat ggcctgtngg accgagttcg 180

gccctcccag ccctcaaggg ggcccgcatc accggctccc tccacatgac catccagacc 240

gccgttctca ttgagacctc acngccttgg gccgagtccg ttggtgctct gaaanatttc 300

tcaaccaagg acaagcng 318

<210> 3157
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 3157

gttgcacgcg tacgtaagct cggaattcgg ctcgagctct ctttctctag tcctgttatt 60

tctcngcgcg taaagcatgg ctttgttggt ggagaaaacc angagtggtc gcgagtacaa 120

ggtcaaggac gcttcccagg ccgacttcgg ccgcctcgag atcgagctgg ccgnggttga 180

gatgcccggc ctcatggcct gtcggaccga gttcggcccc tcccagccct tcaaggggc 240

ccgcatcacc ggctccctcc acatnacann cgacngcanc gttctcattg an 292

<210> 3158
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 3158

tcgcangcac gcgtacgtna gctcggaatt cggctcgagn tttctctagt cctgttattt 60

ctcagcgcgt aaagcatggc tttgttggtg gagaaaacca cgagtggtcg cgagtacaag 120

gtcaaggacc tttcccaggc cgacttcggc cgcctcgaga tcgagctggc cgaggttgag 180

atgcccggcc tcatggcctg tcggaccgag ttcggcccct cccagccctt caaggggggcc 240

cgcatcaccg gctccctcca catggaccat ccagaccg 278

<210> 3159
<211> 332
<212> nucleic acid
<213> Glycine max

<400> 3159

acacccncct accacgccan cgnaagctcg gaattnggct cgagattcac caacccaggt 60

cattgctcag ttgagttgtg gaaggagnag agtaccggca agtacgagaa gaaggtttac 120

gttttgcnca agcaccttga tgagaaggtg gctgcactta acctgggcaa acttgnagct 180

aagctgaccc agcttagcaa gtnccaggnt gattacatca gtgtgcctgt tgagggtcca 240

tacaagcctg ctcantacag gtacnnnctn atnnngatga tcaactgnaa agtgagtgag 300

ggaaagacaa aaatgggttt tatnaatngg at 332

<210> 3160
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 3160

tcgcangcac gcgtacgtaa gctcggaatt cggctcgagc tctttctcta gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgttgg tggagaaaac cacgagtggt cgcgagtaca 120

aggtcaagga cctttcccag gccgacttcg gccgcctcga gatcgagtgg ccgaggttga 180

gatgcccggc ctcatggcct ntcggaccga gttcggcccc tcccagccct tcaaggggggc 240

ccgcatcacc ggctccctcc acatgaccat ccagnngccg ttctcatt 288

<210> 3161
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 3161

tcgcatgcac gcgtacgtaa gctcggaatt cggctcgagc tctttctcta gtcctgttat 60

ttctcagcgc gtaaagcatg gctttgttgg tggagataac cacnnctggt ccncgagtac 120

aaggtcaagg acctttccca ngccgacttc ggccgcctcg agatcgagct ggccgaggtt 180

gagatgcncg gcctcatggc ctgtcggacc gagttcggcc cctcccagcc cttcaagggg 240

gcccgcatca ccggntccct ccacatganc atccagaccg cc 282

<210> 3162
<211> 318
<212> nucleic acid
<213> Glycine max

<400> 3162

cgcacgncgc gaacnnnagc ncgcgaattc ggntcgagng ngcccncgac tggggccccg 60

gtggtggaca ccgacctcat cgtcgacgac ggtggtgang nnacnctnct catccacnaa 120

ggcgtcaang ccnaggagcn cnatgagaag accggcgaan tcnccgannc caactccacc 180

ganaacgccg agctgcagat cgngcttacc atcancagag angggttgaa gaccganccc 240

atnaggnanc gcaagatgaa ggagcgtctc gttggggtnt ctgaggnnac cancactgga 300

gttaagaggc tcnatcag 318

<210> 3163
<211> 319
<212> nucleic acid
<213> Glycine max

<400> 3163

gtcgcangca cgcgtacgta agctcggaat tcggctcgag acggctgcga gaagacgaca 60

gaaggctcag cttgagttgt ggaaggagaa gagtaccggc aagtacgaga agaaagttta 120

cgttttgccc aagcaccttg atgagaaggt ggctgcactt caccttggca aacttggagc 180

taagctcacc aagcttagcc cggcccaggc tgattacatc agtgtgcctg ttgagggtcc 240

ataaagcctg ctcattacag gtactaagta attgagatta tcaacggaaa gtgagggaaa 300

gacaaaatcg gttttatga 319

<210> 3164
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3164

tcgcangcac gcntacgtaa gctcggaatt cggctcgagc ggaaagtgag ggaaagacaa 60

aatcggtttt atgaatcgga ttgattgttt aattttcctt tgataatctc aattacttag 120

tacctgtaat gagcaggctt gtatggaccc tcaacaggca cactgatgta atcagcctgg 180

gccgggctaa gcttggtgag cttagctcca agtttgccaa ggtgaagtgc agccaccttc 240

tcatcaaggt gcttgggcaa aacgtaaact ttcttctcgt acttgccggt actc 294

<210> 3165
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3165

nncgcatgca cgcgtacgta agctcgggaa ttcgggctcg agctctttct ctagtcctgt 60

tatttctcag cgcgtaaagc atgggctttg ttggtggaga aaaccacgag tggtcgcgat 120

acaaggtcaa ggacctttcc caggccgact tcggccgcct cgagatcgag ctggccgagg 180

ttgagatgcc cggcctcatg gcctgtncgg accgagttcg gcccctccca gcccttcaag 240

ggggcccgca tcaccggctn cccttccaca tgaccatcca gaccgccgtt ctca 294

<210> 3166
<211> 204
<212> nucleic acid
<213> Glycine max

<400> 3166

cgtcgcangc acgcgtacgt aagctcggaa ttcggctcga ggtttctgag gaaaccacca 60

ctggagttaa gaggctctat cagatgcagg cgaatgggac tcttctcttc cctgctatta 120

atgtcaatga ctctgtcacc aagagcaagt ttgacaactt gtatgggtgc cgtcactctc 180

tccctgatgg tctcatgagg gcta 204

<210> 3167
<211> 203
<212> nucleic acid
<213> Glycine max

<400> 3167

gtcgcangca cgcgtacgta agctcggaat tcggctcgag gtcaccaaga gcaagtttga 60

caacttgtat gggtgccgtc actctctccc tgatggtctc atgagggcta ccgatgttat 120

gattgctgga aaggtggctg ttgtggctgg atatggtgat gttggcaagg gttgtgctgc 180

tgcaatgaag caggctggtg ctc 203

<210> 3168
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 3168

gcaagtacga gaagaaagtt tacgttttgc ccaagcacct tgatgagaag gtggctgcac 60

ttcaccttgg caaacttggn gctaagctca ccaagcttag cccggcccag gctgattaca 120

tcagtgtgcc tgttgagggt ccatacaagc ctgctcatta caggtactaa gtaattgaga 180

ttatcaacgg aaagtgaggg aaagacaaaa tcggntttat gaatcggatt gattgtttaa 240

ttttcctttt tttgaatttt tgttgt 266

<210> 3169
<211> 326
<212> nucleic acid
<213> Glycine max

<400> 3169

ntctnntgna ngcgtacgta agctcggaat tnngctcgag ntcgagcngc gccgtcttcn 60

anntggacag ggtgagaccc tccagganct actggtggtg caccgngcgc gccctcgact 120

ggggccccgg tggtggaccc gacctcatcg tnnacgacgg tggtgacgct acccttctca 180

tccacgaagg cgtcaaggcc gaggagctct ntgagaagac cggcgaattc ccganccccaa 240

ntccaccgac aagccggant ttcagatcgt gnttancatc atcagagatg gttgaagacc 300

gttccaacca ggttacngca gatgaa 326

<210> 3170
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 3170

natcgatgca cgcgtacgta agctcggnat tcggctcgan ctcgagccga atcggctcga 60

gggttgacca catgaagatn atganganca atgcnattgt anncaacatt ggnncacttt 120

natcatnagn tcgacatnct nggggtggag nactaccccg gcgtgangcg catccaccat 180

caagccccaa accgacagat gggtcanccc cgagaccaat gtcggcatca ttgtcttggc 240

cgagggtcgt ttgatgaact tgggatgcgc cacaggacac cctagttttg tgatgtctgt 300

cctcacnaac caggt 315

<210> 3171
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 3171

ncgcgtgnac gcgtacgtaa gctcggaatt cggctcgagg tttcctcacc actccctcca 60

ttctctttct ctagtcctgt tatttctcag cgcgtaaagc atggctttgt tgtcnggaga 120

anaccacgag tggtcgcgag tacaaggtca aggacctttc ccaggccgac ttcggccgcc 180

tcgagatcga gctggccgag gttgngatgc ccggcctcat ggcntgtcgg accgagttcg 240

gcccctccca gcccttcaag gggcccgca tcac 274

<210> 3172
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 3172

gtcgcangca cgcgtncgga ngcacgctcn ctttgctcta gtgcctgtta tttctcancn 60

cgtaaagcat ggctttgttg gtggagaaaa ccacnagtgg tgcgcgagta canggtnnag 120

gacctttgcc caggccgact tcngccgcct cgagatcgag ctggccgagg ttganatgcc 180

cggcctcatg gcctgttcgg accgagttcg gcccctccca ncccttcaag gggcccgca 240

tcaccggctc cctccacatg accatccaga ncgccgttct ca 282

<210> 3173
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 3173

acgtcgcang cacgcntacg taagctcgga attcggctcg agtacgtttt gcccaagcac 60

cttgntgaga aggtggctgc acttcacctg ggcaaacttg gngctaagct gacccagctt 120

agcaagtccc aggctgatta catcagtgtg cctgttgagg gtccatacaa gcctgctcac 180

tacaggtact aagtgattga gatgatcaac tgaaaagtga gtgagggaaa gacaaaaatc 240

ggttttatca atcggatttg attgtttaat tttcctttt tgatttttgg tgttagactt 300

tcagatttgn gg 312

<210> 3174
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 3174

angnacangc acgcgtacgt aagctcggaa ttcggctcga gtgcccaagc accttgatga 60

gaaggtggct gcacttcacc tgggcaaact tggngctaag ctgacccagc ttagcaagtc 120

ncaggctgat tacatcagtg tgcctgttga gggtccatac aagcctgctc actacaggta 180

ctaagtgatt gagatgatca actgaaaagt gagtgaggga aagacaaaaa tcggttttat 240

caatcggatt tgattgttta attttccttt ttttgatttt tggtgttaga cttttca 297

<210> 3175
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 3175

tcgcntgcac gcgtacgtaa gctcggaatt cggctcgagt ttacgttttg cccaagcacc 60

ttgatgagaa ggtggctgca cttcanctgg gcaaacttgg acctaagctg acccagctta 120

gcaagtccca ggctgattac atcagtgtgc ctgttgaggg tccatacaag cctgctcact 180

acaggtacta agtgattgan atgntcaact gaaaagtgag tgagggaaag acaaaaatcg 240

nttttntcaa tcggatttga ttgtttaatt ttcctttttt tgatttttgg tgttaga 297

<210> 3176
<211> 289
<212> nucleic acid

<213> Glycine max

<400> 3176

gtcgcatgca cgcgtacgta agctcggaat tcggctcgag tgcccaagca ccttgatgag 60

aaggtggctg cacttcacct gggcncactt ggngctaagc tgacccagct tgcncaagtc 120

ccaggctgat tacatcagtg tgcctgttga gggtccatac aagcctgctc actacaggta 180

ctaagtgatt gagatgatca actgaaaagt gagtgaggga aaggacaaaa atcggtttta 240

tcaatcggat ttgatgttta attttccttt tttgattttg gtgttagan 289

<210> 3177
<211> 336
<212> nucleic acid
<213> Glycine max

<400> 3177

gngangcagn gtacgtaagc tcggaattcg gctcgaggag agagagagag agagagagag 60

atctatctat ctatcaagat ngcgttgttg gttgaaaaaa aaaannattg anaggganta 120

caaggtgaag ganatgatgc aagccgnttt nggaagattg gaaattcgag ctggcggagg 180

ttgaaatgcc cggcctcatg tcctncccgc accgagttcg gcccctcttc aatccttcaa 240

gggcgctagg atcancggct ccctccacat gaccatcnan agccgncgtc cttcatngag 300

acnctcaccg ctctcggcgc cgaggtccgc tggtgc 336

<210> 3178
<211> 209
<212> nucleic acid
<213> Glycine max

<400> 3178

tnattacncg tacgnaagct cggaattcgg ntcgagccct ccaggagtac tggtggtgca 60

ccgagcgcgc cctcgactgg ggccncggtg gtggacccga ccttcatcgt cgacgacggt 120

ggtgacgnta cccttctcat ccacgaaggc gtcaaggncg agganctcta tgagaanacc 180

ggcgaactcg ccgancccan ctccacaaa 209

<210> 3179
<211> 291
<212> nucleic acid

<213> Glycine max

<400> 3179

nagtcgcang cacgcgtacg taagctcgga attcggctcg aggctcacca actcccgctc 60

ccatttcctt atttatagac agagtctgat tgtttcctca ccactccctc cantctcttt 120

ctcctagtcc tgttatttct cagcgcgtaa agcatggctt tgttggtgga gaaaaccacg 180

agtggtcgcg agtacaaggt caaggacctt tcccaggccg acttcggccg cctcgagatc 240

gagctggccg aggttgagat gcccggcctc atggcctgtc ggaccgagtt c 291

<210> 3180
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 3180

nacgtcgcat gcacgcgtac gtnagctcgg aattcggctc gagtgngaag accggggaac 60

tccccgaccc taactccact gacaacgccg agttccagat cgtgcttacc atcatacaga 120

gatgggttga agaccgatcc caccaggtac cgcaagatga aggagcgtct cgttggggtt 180

tctgaggaaa ccaccactgg tgttaagagg ctatatcaga tgcaggcgat tgggntntat 240

ttcccgctna taataatnnc nngnnntctg ttaccaagng cngtntnaca acttgnc 297

<210> 3181
<211> 208
<212> nucleic acid
<213> Glycine max

<400> 3181

gtcgcangca cgcgtacgta agctcggaat tcggctcgag tacgttttgc ccaagcacct 60

tgatgagaag gtggctgcac ttcacctggg caaacttggn gctaagctga cccagcttag 120

caagtcccag gctgattann ncagtgtgcc tgttgagggt ccatacaagc cgctcactac 180

aggtactaag tgattgagat gatcaact 208

<210> 3182
<211> 212
<212> nucleic acid
<213> Glycine max

<400> 3182

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctctctttct ctagtcctgt 60

tatttctcag cgcgtaaagc atggctttgt tggtggagaa aaccacnagt ggtcgcgagt 120

acaaggtcaa ggacctttcc caggccgact tcggcngcct cgagatcnag ctggccgagg 180

ttgagatgcc cggcctcatg gcctgtcgga cc 212

<210> 3183
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 3183

aagtncncat gcacgcntac gtaantcgga attcggctcg agctctagtc ctgttatttc 60

tcancgcgta aagcatgggc tttgttggtg gagaaaacca cgagtngtcc gctagtacaa 120

ggtcaaggac ctttcccagg ccgacttcng ccgcctcgag atcgagctgg ccgaggttga 180

natgcccggc ctcatggcct gtnggaccga nttcggcccc ttcccaaccc ttcaaggggg 240

cccgnatcan cggctccctn canatganca tccagaancg cgttntcatt gngaccctna 300

ncggctttgg ggcggag 317

<210> 3184
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 3184

tcgcangcag ncgtacgtaa gctcggaatt cggctcgang anaggtgnct gcacttcacc 60

tgggcaaact tggcnctaag ctgacccanc ttagcaagtc ccaggctgat tacatcagtg 120

tgcncgttga gggtccatac aagcctgctc antannggta ctaagtgatt gagatgatca 180

actgaaaagt gagtgaggga aagacaaaaa tcggttttat caatcggatt tgattgttta 240

attttccttt tttgattttt ggtgttngac ttttcagaat gtggtagaag aatt 294

<210> 3185
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 3185

gatggcgttg ttggttgaga aaacaagcag tggaagggag tacancgtga aggncatgac 60

gcaagccgnt ttcggaagat tggaaatcga gctggcggag gttgaaatgg cccggcatca 120

tgtccctccc ggcaccgngt tcggcccctc ttcaaccctt caagggcgcn angatnaccg 180

gntccctcca caatgagcnn ncaaanagcc gtacctnaaa cgnagacncg cacnngccng 240

ggggc 245

<210> 3186
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 3186

aaaannanan gtngcatgca cgcgtacgta agctcggaat tcggctcgnn ctcgagccga 60

atcggctcga ctttctctag tcctgttatt tctcagcgcg taaagcatgn ctttgttggt 120

ggagaaaaca nacgagtggt cgcgagtaca aggtcaagga cctttcccag gccgacttcg 180

gccgcntcga gatcgagctg gccgaggttg agatgcccgg cctcatggcc tgtn 234

<210> 3187
<211> 298
<212> nucleic acid
<213> Glycine max

<400> 3187

tcgcnngcac gcgtacgtna gctcgnantt cggcnccgag tggnaggagg taaggctggg 60

tcgacccaga tctagttgag ctcaccaact cccgctccca tttccttatt tatagacaga 120

gtctgattgt ttcctcacca ctccctccan tctctttctc tagtcctgtt atttctcagc 180

gcgtaaagca tggctttgtt ggtggagaaa accacgagtg gtcgcgagta caaggtcaag 240

gacctttccc aggccgactt cggccgcctc gagatcgagc tggccgaggt tgagatgc 298

<210> 3188
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 3188

tntgtcgcat ncacgcgtac gtaagctcgg aattnggctc gnnctcganc cgctncgagc 60

cgctcgagcc ggtcctgtna tntctcagcg cgtaaagcat ggctttantt ggtgganaaa 120

accacgagtg gtcgcgagta caaggtcaag gacctttccc aggccgactt cgggcccctn 180

cgagatcgag ctggccgagg ttgagatgcc cggcctcatg g 221

<210> 3189
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 3189

anncananaa tnatgcacgc gtacgtaagc tcggaattcg gctcgagatt gtttcctcac 60

cactccctcc antctctttc tctagtcctg ttatttctca gcgcgtaaag catggctttg 120

ttggtggaga aaaccacgag tggtcganag taanaaggtc aaggactttc ccaggccgac 180

ttcggcngcc tcgagatcga gctggccgag gttnaaatgc cgggcctcat ggctggncgg 240

acgattnggg cccctcnaan cctttaaggg gggccnaaat cangggntcc n 291

<210> 3190
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3190

ncgcgatgca gcgtacgtaa gctcggaatt cggctcgagg ttatttctca gcgcgtaaag 60

catggctttg tnggtggaga aaaccacgag tggtcgcgag tacaaggtca aggacctttc 120

ccaggccgac ttcggccgcc tcgagattcg agctggnccg aggttgagat gcccggacct 180

catggcctgt ncggaccgag ttnggncccc tacccagccc tttcaagggg gncccgcatc 240

accggcnccc nccacatgna ccatccagtg ccgnccgttg ttcattgngn accctgcacc 300

gcc 303

<210> 3191
<211> 144
<212> nucleic acid
<213> Glycine max

<400> 3191

ngcaggcacg cgtacgtaag ctncggaatt cggctcgagn cggctcgagg ggttgtgctg 60

ctgcattgaa gcaggctggt gctcgtgtca tcgtgactga gattgacccc atttgtgccc 120

ttcaggctct catggaaggg cctt 144

<210> 3192
<211> 134
<212> nucleic acid
<213> Glycine max

<400> 3192

aacgtcgcat gcacgcgtac gtaagctcgg aattcggctc gagcccgacc tnatcgtcga 60

cgacggtggt gacgctaccc ttctcatgcc acgaaggcnt tnaggccgag gagctctatg 120

agaagaccgg cgaa 134

<210> 3193
<211> 303
<212> nucleic acid
<213> Glycine max

<400> 3193

acgtcgcatg cacgcgtacg taagctcgga attcggctcg aggcttagca agtcccaggg 60

ctgattacat cagtgtgcct gttgagggtc catacaagcc tgctcactac aggtactaag 120

tgattganat gatcaactga aaagtgagtg agggaaagac aaaaatcggt tttatcaatc 180

ggatttgatt gtttaatttt ccttttttg atttttggtg ttagactttt cagatttgtg 240

gtagaagaat gtagccattt ttatttctgt agaacttttg ttcggtgggt gggaccagta 300

agg 303

<210> 3194
<211> 315
<212> nucleic acid
<213> Glycine max

<400> 3194

tagcangcac gcgtacgtaa gctcggaatt cggctcgagg ggtcgtttga tgaacttggg 60

gtgtgccacg ggacacccca gctttgtgat gtcgtgctcc ttcaccaacc aggtcatngc 120

tcagcttgaa ttgtggaaag agaagggttc tgggaagtat gagaagaagg tgnatgtgtt 180

gcccaagcac cttgacgnga aagtggcttc tctccacctt ggccagnttg gagctaggct 240

caccaagctt tccanagacc aagctgatta catcagtgtg cctgttgagg gtccatacaa 300

gccgctccnc acagt 315

<210> 3195
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 3195

cancacactc gcangcacgc gtacgtaagc tcggaattcg gctcgagcag gtcattgctc 60

agcttgaatt gtggaaagag aagggttctg ggaagtatga gaagaaggtg tatgtgttgc 120

ccaagcacct tgacgagaaa gtggcttctc tccaccttgg ccagcttgga gctaggctca 180

ccaagctttc caaagaccaa gctgattaca tcagtgtgcc tgttgagggt ccatacaagc 240

ctgctcacta caggtactga tccatcctat tgggggagaa taaacctaaa 290

<210> 3196
<211> 217
<212> nucleic acid
<213> Glycine max

<400> 3196

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ctcagcttga attgtggaaa 60

gagaagggtt ctgggaagta tgagaagaag gtgtatgtgt tgcccaagca ccttgacgag 120

aaagtggctt ctctccacct tggccagctt ggagctaggc tcaccaagct ttccaaagac 180

caagctgatt acatcagtgt gcctgttgag ggtccat 217

<210> 3197
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 3197

gaaagagaag ggttctggga agtatgagaa gaaggtgtat gtgttgccca agcaccttga 60

cgagaaagtg gcttctctcc accttggcca gcttggagct aggctcacca agctttccaa 120

agaccagctg attacatcag tgtgctgttg angggggcca taanagcttg tcnctnangg 180

nnnnggnccn ncctttgggg gggaannaac ccgaantntn tttnattcgg ggggggnttg 240

tnnantttnn ttnng 255

<210> 3198
<211> 338
<212> nucleic acid
<213> Glycine max

<400> 3198

aggaccatgc cgccgccgcc atcgcccgcg acaggcctcc gtcttcgcct ggaagggtga 60

gaccctccag gaatactggt ggtgcaccga gcgcgcctcg actgggnncc ccggcggcgg 120

cccgatctca tcgtcgacga cggcggcgac accactcttc tcattcacga gggcgtcaag 180

gccgaggaga tctttgagaa gaccggccag ttccccgacc cggcttcctc cgacaatgcg 240

gattcncgat cgtgctgagc atcatcaggg atggttgaag accgatccca agaggtacca 300

caagatgaag acagaatcgt cggtgtctcc gaagaaac 338

<210> 3199
<211> 317
<212> nucleic acid
<213> Glycine max

<400> 3199

agtcgcatgc acgcgtacgt aagctcggaa ttcggctcga ggcctggaag ggtgagaccc 60

tccaggaata ctggtggtgc accgagcncg ccctcgactg gngccccggc ggcggccccg 120

anctcatcgt ccgacgacgg cggcgacacc actcttctca ttcacgaggg cgtcaaggcc 180

gaggagatct ttgagaagac cggccagttc cccgacccgg cttcctccga caatgcggag 240

ttccagatcg tgctgagcat cattcaggga tggcttgaag accgatccca agaggtacca 300

caagatgaag gacagaa 317

<210> 3200
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 3200

gtcgcangca cgcgtacgta agctcggaat tcggctcgag ggaatatcca ctagcttcgt 60

ggaggtgacg gatcttgaca tggttgatgc tnccatagta gaagggaaaa caaaagtggc 120

tttacttcga atctgtttcc aaccccaccc ttacggttgc gaacatacct gaactgtgcc 180

acatggcaca ccggaaggga gtgacggtgg tggtggacaa cacgttcgcg cccatggtgc 240

tttcgccagc gcgtcttggt gctgatgttg tcgttcacag tatctccaag 290

<210> 3201
<211> 213
<212> nucleic acid
<213> Glycine max

<400> 3201

attcggctcg aggcggaata tccactagct tcgtggaggt gacggatctt gacatggttg 60

atgctgccat agtagaaggg aaaacaaaag tgctttactt cgaatctgtt tccaacccca 120

cccttacggt tgcgaacata cctgaactgt gccacatggc acaccggaag ggagtgacgg 180

tggtggtgga caacacgttc gcgcccatgg tgc 213

<210> 3202
<211> 297
<212> nucleic acid
<213> Glycine max

<400> 3202

cncangcacg cgtacgtaag ctcggaattc ggctcgaggt gggacccacg cgctcctctc 60

acactttctc ccgcgcacgt gcggaatatc cactagcttc gtggaggtga cggatcttga 120

catggttgat gctgccatag tagaagggaa aacaaaagtg ctttacttcg aatctgtttc 180

caaccccacc cttacggttg cgaacatacc tgaactgtgc cacatggcac accggaaggg 240

agtgacggtg gtggtggaca acacgttcgc gcccatggtg ctttcgccag cgcgtct 297

<210> 3203
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 3203

gtcncnngta cgtaanctcg gaattcggct cgagcngaca ancccaannc ccaagcccaa 60

caatctgcat ccccggccgc ggcccgtgca accaaatggg ccgtggacag ctggaagtcc 120

aagaaggccc tgcagntgcc cgaatacccc aaccaggagg atctcgaggc cgtcctccgc 180

accctcgacg cntnccccctc anatcgtctt cgccggcgag gcccgganac tcgaggagca 240

cctcgccgag gccgccatng gaaatgcntt cttccncnan ggcgnagatg tnccnagagt 300

<210> 3204
<211> 434
<212> nucleic acid
<213> Glycine max

<400> 3204

ccacgcgtcc gcccacgcgt ccggtccgcc atctccgccg tcctnctcca gctctgcagc 60

cacngcgaac anggtggtcg nctccagaac tctntacngt gggacccacn cgctcctctc 120

acactttctc ccgcgcacgt gcggaatatc cactagcttc gtggaggtga cngatcttga 180

catggnttat gctgccataa tagaaaggaa aacaaaagtg ctttacttnt aatctggttc 240

caaccccacc cttacngttg cgaacatacc tgaactgtgc cacatggcac accggaaggg 300

agtgactgtg gtggtggaca acacgttcgt gcccatggtg ctttcgccag cgcgtntttg 360

gtgcttatgt ttgtncttca cagtatctcc aagttcatna atnggtgggg cccgatatta 420

ttgcangagc ggng 434